CCD-TR2000E
RMT-702

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

SONY
10x
SteadyShot
Handycam video Hi8
POWER
CAMERA
OFF
SONY

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only available.

video Hi8
Handycam

A MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm video MECHANICAL ADJUSTLMENT MANUAL Ⅳ" (9-973-199-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system	Two Rotary heads, Helical scanning FM system
Audio recording system	Two Rotary head, Helical scanning FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette (Hi8 or standard 8 mm)
Tape speed	SP mode: Approx.20.051 mm (13/16 in)/second LP mode: Approx. 10.058 mm (13/32 in)/second
Recording time	SP mode: 1 hour and 30 minutes (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Playback time	SP mode: 1 hour and 30 minutes (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Fast-forward/rewind time	Approx. 6 minutes 30 seconds (E5/P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and White) (AEP, UK model) (color) (E, Australian, Tourist model)
Lens	Combined 10 x power zoom lens f= 6.1 to 61 mm (1/4 to 2 7/16 inches) (44 to 440 mm when converted to a 35 mm still camera) F 1.6 to 3.1 Filter diameter 52 mm (2 1/8 inches) TTL autofocus system inner focus wide macro system
Colour temperature	Auto, HOLD, Indoor ☼ 3,200 K, Outdoor ☀ 5,800 K
Minimum illumination	3 lx (F 1.6)
Illumination range	3 lx to 100,000 lx
Recommended illumination	More than 100 lx
Aperture correction	Auto

Input and output connectors

S video output	4-pin mini DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.3 Vp-p 75 ohms, unbalanced
Video output	Phono jack, 1 Vp-p, 75 ohms, unbalanced sync negative
Audio output	Phono jacks (2: stereo L and R) –7.5 dBs, (at load impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT	Special mini-jack, DC 5 V
Headphones jack	Stereo mini-jack (ø 3.5)
Remote jack	Stereo mini-mini-jack (ø 2.5)
MIC jack	Stereo mini-jack, –66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kilohms (ø 3.5)

—Continued on next page—

MICROFILM

Hi8 VIDEO CAMERA RECORDER

SONY®

General

Power requirements	On battery mounting surface 6.0 V (Battery pack) 7.5 V (AC power adaptor) 9.0 V (Alkaline batteries)
Power consumption	6.1 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-20°C to 60°C (-4°F to +104°F)
Dimensions	Approx. 109 x 109 x 216 mm (w/h/d) (4 3/8 x 4 3/8 x 8 5/8 inches)
Mass	Approx. 920 g (2 lb) excluding the battery pack, lithium battery, cassette, lens cap, jack cover and shoulder strap Approx. 1,260 g (2 lb 8 oz) including the battery pack NP-66, lithium battery CR2025, cassette, lens cap, jack cover and shoulder strap
Microphone	Electret condenser microphone, stereo type
Supplied accessories	

AC power adaptor

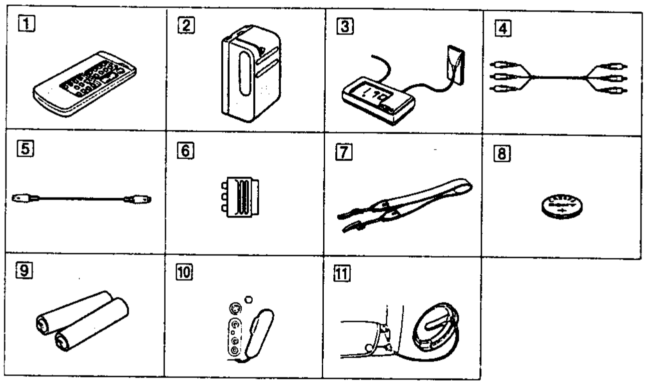
Power requirements	110 - 240 V AC, 50/60 Hz
Power consumption	20 W
Output voltage	DC OUT: 7.5 V, 1.6 A in operating mode Battery charge terminal: 10 V, 1.1 A in charge mode
Application	Sony battery pack NP-55H, NP-66, NP-66H, NP-77H, NP-77HD
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-20°C to + 60°C (-4°F to 140°F)
Dimensions	Approx. 170 x 41.6 x 82 mm (w/h/d) (6 3/4 x 1 11/16 x 3 1/4 inches) including projecting parts and controls
Mass	Approx. 520 g (18 oz)

Design and specifications are subject to change without notice.

Before You Begin

Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.



1. **Wireless Remote Commander (1)**
2. **NP-66 Battery Pack (1)**
3. **AC-V35/V35A AC power adaptor (1)**
4. **A/V connecting cable (1)**
5. **S video connecting cable (1)**
6. **21-pin adaptor (1)**
7. **Shoulder strap (1)**
8. **CR2025 Lithium Battery (1)**
9. **R6 (size AA) battery for Remote Commander (2)**
10. **Jack cover (1) (Attached to camcorder)**
11. **Lens cap (1)**

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and brides.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, thought functioning, show obvious sings of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
    - Keep the temperature of the soldering iron around 270℃ during repairing.
    - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
    - Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

Section Title Page

SERVICE NOTE ······························· 6

1. GENERAL ································· 1-1

2. DISASSEMBLY

2-1. REMOVAL OF FRONT PANEL ASSEMBLY···· 2-1
2-2. REMOVAL OF CASSETTE LID ASSEMBLY···· 2-1
2-3. REMOVAL OF CABINET (L) ASSEMBLY····· 2-2
2-4. REMOVAL OF CABINET (R) ASSEMBLY····· 2-2
2-5. REMOVAL OF CONTROL SWITCH BLOCK···· 2-3
2-6. REMOVAL OF DD-62 BOARD AND
SW-222 BOARDS····························· 2-3
2-7. REMOVAL OF LS LID ASSEMBLY ··········· 2-4
2-8. OPENING OF VC-132 BOARD ················ 2-4
2-9. REMOVAL OF LENS ASSEMBLY
(CD-105 BOARD) ····························· 2-5
2-10. REMOVAL OF VS-99 BOARD ················ 2-5
2-11. REMOVAL OF JK-108 AND
AU-149 BOARDS····························· 2-6
2-12. REMOVAL OF SL-37 BOARD ················ 2-6
2-13. REMOVAL OF EVF ASSEMBLY
(VF-68P/69P BOARD)
(E, Australian, Tourist model) ················ 2-7
2-14. REMOVAL OF EVF ASSEMBLY
(VF-42P BOARD) (AEP, UK model) ··········· 2-8
2-15. INTERNAL VIEWS ···························· 2-9
2-16. CIRCUIT BOARDS LOCATION················ 2-10

3. DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM ················ 3-1
3-2. CAMERA (1) BLOCK DIAGRAM ·············· 3-7
3-3. CAMERA (2) BLOCK DIAGRAM ·············· 3-11
3-4. CAMERA (3) BLOCK DIAGRAM ·············· 3-13
3-5. VIDEO (1) BLOCK DIAGRAM ················ 3-16
3-6. VIDEO (2) BLOCK DIAGRAM ················ 3-21
3-7. SERVO BLOCK DIAGRAM ···················· 3-23
3-8. SYSTEM CONTROL BLOCK DIAGRAM ········ 3-26
3-9. AUDIO BLOCK DIAGRAM····················· 3-31
3-10. EVF BLOCK DIAGRAM
(E, Australian, Tourist model) ················ 3-35
3-11. EVF BLOCK DIAGRAM (AEP, UK model) ····· 3-39
3-12. INDEX BLOCK DIAGRAM····················· 3-41
3-13. POWER BLOCK DIAGRAM····················· 3-43

Section Title Page

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM ··············· 4-1
4-2. PRINTED WIRING BOARDS AND
SCHEMATIC DIAGRAMS ······················ 4-5
- DD-62, SW-222 Board ························· 4-5
- CF BLOCK ······································ 4-11
- VS-99 , JK-108 Board ························· 4-13
- AU-149 Board ································· 4-37
- VC-132, MF-244, CD-105, YP-13 Board ·········· 4-44
- LS-33, SL-37 Board ···························· 4-65
- LM-40, FP-442 Board ························· 4-67
- VF-69P, VF-68P, FF-75 Board
(E, Australian, Tourist model) ······················ 4-69
- VF-42P Board (AEP, UK model) ··················· 4-76
- MA-184 Board ··································· 4-81

4-3. SEMICONDUCTOR LEAD LAYOUTS ·········· 4-86

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS ····························· 5-1
5-1-1. CABINET (L) AND FRONT PANEL
ASSEMBLIES ································ 5-1
5-1-2. CABINET (R) AND EVF ASSEMBLIES······ 5-2
5-1-3. MAIN BOARDS ASSEMBLY················ 5-3
5-1-4. CASSETTE COMPARTMENT HOLDER
ASSEMBLY································· 5-4
5-1-5. LS CHASSIS ASSEMBLY··················· 5-5
5-1-6. MECHANISM CHASSIS ASSEMBLY (1) ····· 5-6
5-1-7. MECHANISM CHASSIS ASSEMBLY (2) ····· 5-7
5-1-8. ZOOM LENS ASSEMBLY (VCL-6110WF) ···· 5-8
5-2. ELECTRICAL PARTS LIST······················ 5-9

6. INTERFACE•IC PIN FUNCTIONS

6-1. CAMERA MICRO PROCESSOR
PIN FUNCTION (VC-132 BOARD
IC 653 : SC424603FUV (68HC11) ················ 6-1
6-2. VAP MICRO PROCESSOR PIN FUNCTION
(VC-132 BOARD IC745 : CXP80620A-031R) ······ 6-2
6-3. MECHANISM CONTROL MICRO PROCESSOR
PIN FUNCTION (VS-99 BOARD
IC501 : CXP80624A-034R)························ 6-2
6-4. MODE CONTROL MICRO PROCESSOR
PIN FUNCTION (VC-132 BOARD
IC902 : MB89098PFV-G-104) ···················· 6-4
6-5. INTERFACE ···································· 6-6
6-5-1. Video/Audio Block Interface ················ 6-6
6-5-2. Servo Block Interface························ 6-7

Section Title Page

7. ADJUSTMENTS

7-1. CAMERA SECTION ADJUSTMENT ············ 7-1
1-1. Preparations Before Adjustment (Camera Section) ············ 7-1
1-1-1. List of service tools ············ 7-1
1-1-2. Preparations ············ 7-3
1-1-3. Precautions ············ 7-4
1. Switch Settings ············ 7-4
2. Adjusting Procedure ············ 7-4
3. Subject ············ 7-4
1-1-4. Adjusting Remote Commander ············ 7-5
1. Using the adjusting remote commander ············ 7-5
2. Precautions upon using the adjusting remore commander ············ 7-5
1-1-5. Page F Address List ············ 7-6
1-1-6. Page 6, Page 2 Address List ············ 7-13
1. Page 6 ············ 7-13
2. Page 2 ············ 7-14
1-1-7. Date Processing ············ 7-14
1-2. Camera System Adjustments ············ 7-15
1. Adjusting points when replacing main parts ··· 7-15
2. Power supply voltage check (DD-62 board) ···· 7-15
3. Page F data initialization ············ 7-16
4. Page F data modification ············ 7-17
5. 28 MHz original oscillation adjustment (VC-132 board) ············ 7-17
6. V SUB adjustment (VC-132 board) ············ 7-18
7. VRG adjustment (VC-132 board) ············ 7-18
8. CCD imager correction data writing ············ 7-19
9. HALL adjustment ············ 7-20
10. Flange back adjustment ············ 7-22
11. Flange back check ············ 7-23
12. SYNC level check (VC-132 board) ············ 7-24
13. Burst level check (VC-132 board) ············ 7-25
14. Picture frame setting ············ 7-26
15. IRIS IN/OUT adjustment ············ 7-27
16. Max gain adjustment (VC-132 board) ········· 7-28
17. Auto white balance reference data input ······ 7-29
18. Auto white balance adjustment ············ 7-30
19. White balance check ············ 7-31
20. Color reproductivity adjustment ············ 7-32
21. Pan tilt detect adjustment ············ 7-33
22. Vap unit adjustment ············ 7-33
1-3. Electronic Viewfinder System Adjustments (E, Australian, Tourist model) ············ 7-34

Section Title Page

1. Current consumption adjustment (VF-69P board) ············ 7-35
2. Power supply voltage check (VF-68P board) ············ 7-35
3. VCO adjustment (VF-68P board) ············ 7-35
4. LC COM voltage check (VF-68P board) ········ 7-36
5. BRIGHT adjustment (VF-69P board) ············ 7-36
6. CONTRAST check (VF-68P board) ············ 7-37
7. SUB BRIGHT R preset adjustment (VF-68P board) ············ 7-37
8. SUB BRIGHT R preset adjustment (VF-68P board) ············ 7-38
9. White balance adjustment (VF-68P board) ······ 7-38
1-4. Electronic Viewfinder System Adjustment (AEP, UK model) ············ 7-39
1. Horizontal Slant Adjustment ············ 7-39
2. Centering Adjustment ············ 7-39
3. Focus Adjustment ············ 7-39
4. Aberration Adjustment ············ 7-40
5. Horizontal Oscillation Frequency Adjustment (VF-42P board) ············ 7-40
6. Horizontal Amplitude Adjustment (VF-42P board) ············ 7-40
7. Vertical Amplitude Adjustment (VF-42P board) ············ 7-41
8. Brightness, Contrast Adjustment (VF-42P board) ············ 7-41
9. Horizontal Amplitude, Vertical Amplitude, Focus Check ············ 7-41
1-5. Arrangement Diagram For Adjustment Parts ··· 7-42
7-2. MECHANICAL SECTION ADJUSTMENTS ······· 7-47
1. Setting the track shift mode ············ 7-47
2. Preparation for adjustment ············ 7-47
7-3. VIDEO SECTION ADJUSTMENTS ············ 7-48
3-1. Preparations Before Adjustment ············ 7-48
3-1-1. Equipments used ············ 7-48
3-1-2. Precautions upon adjustment ············ 7-48
3-1-3. How to set the REC in the model without REC switch ············ 7-49
3-1-4. Connector for adjustments (CN002 of VS-99 board) ············ 7-49
3-1-5. Connection of equipments ············ 7-50
3-1-6. Checking the input signals ············ 7-50
1. Video input ············ 7-50
3-1-7. Alignment tape ············ 7-51
3-1-8. Input/Output Level and Impedance ·········· 7-52

Section Title Page

3-1-9. Recording mode (Normal/Hi8) Switching ···· 7-52
3-1-10. Service Mode ···· 7-53
  1. Setting the service mode ···· 7-53
  2. Page D write protect ···· 7-56
  3. Test mode setting ···· 7-56
  4. Emergency code ···· 7-56
  5. Emergency mode ···· 7-57
  6. Bit value discrimination ···· 7-57
  7. Mode controller input check ···· 7-58
  8. White balance mode switching ···· 7-59
  9. Zoom position check ···· 7-59
  10. LCD, LED check ···· 7-59
  11. Key input check ···· 7-60
  12. Key input check (A/D Port) ···· 7-60
  13. Wireless remote commander reception contents check ···· 7-61
  14. Battery voltage check ···· 7-61
  15. Mechanism section switch, etc. check ···· 7-62
  16. Mechanism controller input/output check ·· 7-63
  17. Mechanism controller input check ···· 7-63
  18. Mechanism controller A/D port input voltage check ···· 7-64
  19. Tape top/end sensor check ···· 7-64
  20. ndividual operations of the drum, capstan, and loading motor ···· 7-65
  21. Version of mechanical control microprocessor ···· 7-65
  22. Page D address list ···· 7-66
3-2. Adjusting Points When Replacing Main Parts ···· 7-70
3-3. Power Supply System aDJUSTMENTS ···· 7-70
  1. Oscillator frequency check (DD-62 board) ···· 7-70
  2. Power supply voltage check (DD-62 board) ···· 7-70
3-4. SYstem Control System Adjustments ···· 7-71
  1. Page D initial value input ···· 7-71
  2. Battery end adjustment ···· 7-72
  3. Battery down check ···· 7-73
3-5. Servo System Adjustments ···· 7-74
  1. Switching position adjustment (VS-99 board) ···· 7-74
3-6. Video Adjustments ···· 7-75
  1. Playback frequency characteristics adjustment (VS-99 board) ···· 7-76
  2. Flying erase check (VS-99 board) ···· 7-77
  3. VXO oscillation frequency check (VS-99 board) ···· 7-77
  4. SYNC AGC level adjustment (VS-99 board) ···· 7-78
  5. IR adjustment (VS-99 board) ···· 7-79
  6. Chroma comb filter adjustment (VS-99 board) ···· 7-80
  7. Emphasis input level adjustment (VS-99 board) ···· 7-81
  8. PB Y level adjustment (VS-99 board) ···· 7-82
  9. Y FM deviation adjustment (VS-99 board) ···· 7-83
  10. Y FM carrier frequency adjustment (VS-99 board) ···· 7-84
  11. Hi8 mode Y FM carrier frequeincy Adjsutment (VS-99 board) ···· 7-85
  12. Hi8 mode Y FM deviation Adjsutment (VS-99 board) ···· 7-85
  13. Chroma emphasis f0 adjsutment (VS-99 board) ···· 7-86
  14. REC Y level adjustment (VS-99 board) ···· 7-87
  15. REC C level adjustment (VS-99 board) ···· 7-88
  16. REC L CONT adjustment (VS-99 board) ···· 7-88
  17. REC ATF level check (VS-99 board) ···· 7-89
  18. REC AFM level check (VS-99 board) ···· 7-90
  19. Index marker system adjustment ···· 7-90
    1) Playback VCO free oSillation frequency adjustment (VS-99 board) ···· 7-90
    2) REC PCM level check (VS-99 board) ···· 7-90
  20. Chroma comb filter fine adjustment (VS-99 board) ···· 7-91
  21. YD adjustment (VS-99 board) ···· 7-91
3-7. Audio System Adjustment ···· 7-92
  1. 1.5 MHz record level check (AU-149 board) ···· 7-92
  2. E-E output level check (AU-149 board) ···· 7-93
  3. REC matrix L-R adjustment (AU-149 board) ··· 7-93
  4. REC matrix L + R check (AU-149 board) ···· 7-94
  5. 1.5 MHz deviation adjustment ···· 7-95
  6. 1.7 MHz deviation adjustment (AU-149 board) ···· 7-96
  7. Overall level characteristics, distortion rate check ···· 7-97
  8. Separation check ···· 7-97
  9. Overall noise level check ···· 7-97
3-8. Arrangement Diagram For Adjustment Parts ··· 7-98

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

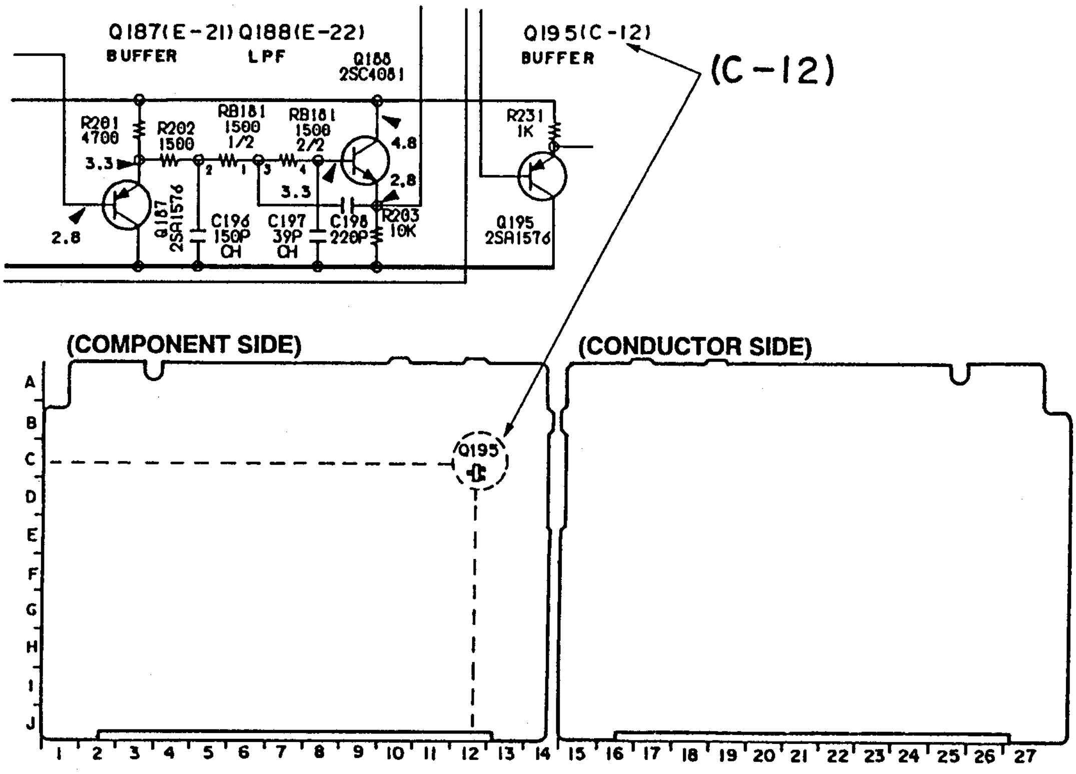
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 77, 91, 103, 120, 153 and 155.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
R231
1K
Q195
2SA1576
(C-12)
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
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J
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✲] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

This section is extracted from instruction manual.

Getting Started

Charging and Installing the Battery Pack

Before using your camcorder, you first need to charge and install the supplied NP-66 battery pack. To charge the battery pack, use the supplied AC-V35/V35A AC power adaptor.

Charging the Battery Pack

Charge the battery pack on a flat place without vibration.
(1) Connect the power cord to a wall outlet.
(2) Align the right side of the battery with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow. **(3)** Set the selector to CHARGE. Charging begins.
When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery and install it on the camcorder.
To stop charging, set the selector to the center position.

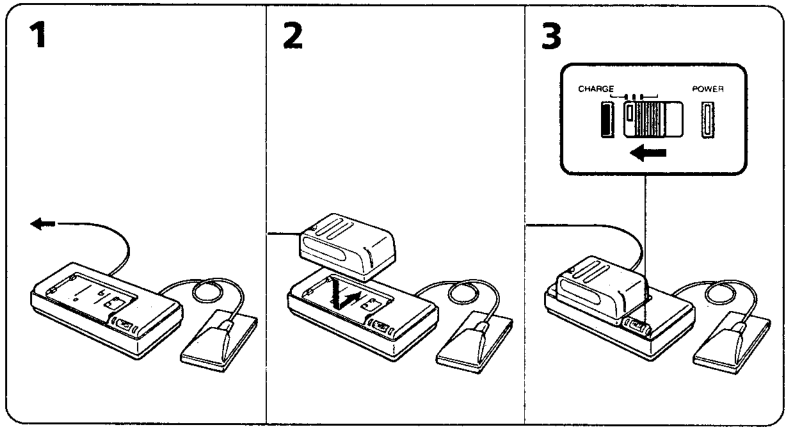
Preparativos

Carga y colocación de la batería

Antes de utilizar la videocámara, primero tendrá que cargar y colocar la batería NP-66 suministrada. Cárguela utilizando el adaptador de CA AC-V35/V35A suministrado.

Carga de la batería

Cargue la batería en un lugar nivelado y exento de vibraciones.
(1) Conecte el cable de alimentación a una toma de la red. **(2)** Alinee el lado derecho de la batería con la línea del adaptador de CA, después deslice la batería en el sentido de la flecha. **(3)** Ponga el selector en CHARGE. Se iniciará la carga.
Cuando finalice la carga, la lámpara CHARGE se apagará. Ponga el selector en la posición central y desconecte el adaptador de la toma de la red.
Después quite la batería y fíjela a la videocámara.
Para parar la carga, ponga el selector en la posición central.



Charging Time and Battery Life

Battery Pack	NP-66 (Supplied)	NP-55H	NP-77H NP-77HD	NP-66H
Charging time*	80	70	140	100
Battery life**	75	60	135	95

* Approximate charging time to charge an empty battery pack using the AC-V35/V35A (Lower temperatures require a longer charging time.)
** Approximate continuous recording time indoors

¡mportant!
Use the battery completely before recharging!

Before you recharge the battery, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the ⌧ indicator and the red lamp in the viewfinder flash rapidly.

Removing the Battery Pack

Slide the battery pack in the direction of the arrow (see drawing).

See the next page for further information.

Tiempo de carga y la duración de la batería

Batería	NP-66 (suministrada)	NP-55H	NP-77H NP-77HD	NP-66H
Tiempo de carga*	80	70	140	100
Duración de la batería**	75	60	135	95

* Tiempo de carga aproximado para cargar una batería completamente agotada utilizando el AC-V35/V35A. (A bajas temperaturas, el tiempo de carga será más largo.)
** Tiempo aproximado de videofilmación continua en interiores

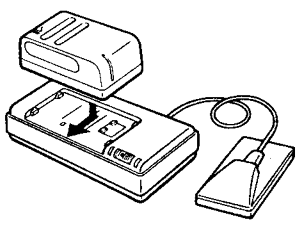
¡Importante!
Utilice completamente la batería antes de recargarla!

Antes de recargar la batería, asegúrese de que la batería esté completamente agotada (descargada). La carga repetida sin la batería completamente descargada hará que la capacidad de la misma disminuya. Sin embargo, será posible recuperar la capacidad original de la batería si la vuelve a utilizar y cargar por completo.

Para utilizar la batería completamente, extraiga el videocassette, deslice el selector POWER hasta CAMERA, y con la batería fijada deje la videocámara hasta que en el visor parpadeen rápidamente el indicador ⌧ y la lámpara roja.

Para quitar la batería

Deslícela en el sentido de la flecha (vea la ilustración).



Para más información, consulte la página siguiente.

Charging and Installing the Battery Pack

Notes on Charging the Battery Pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

Installing the Battery Pack

(1) Lift up the viewfinder. **(2)** Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack in the direction of the arrow.

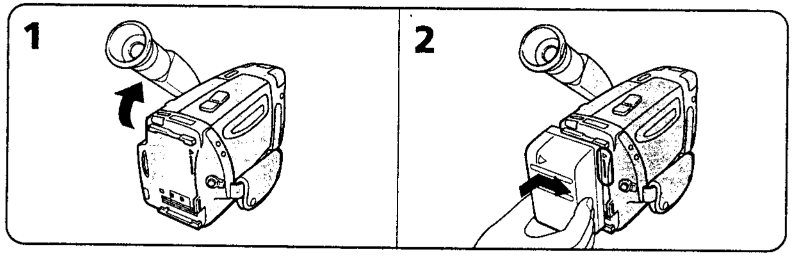
Carga y colocación de la batería

Notas sobre la carga de la batería

- Es normal que la lámpara POWER permanezca encendida durante un momento después de que haya quitado la batería y desconectado el cable de alimentación cuando finalice la carga.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de aproximadamente un minuto, vuelva a conectar el cable y a poner el selector en CHARGE.
- No podrá operar la videocámara empleando el adaptador de CA mientras esté cargando la batería.

Fijación de la batería

(1) Levante el visor. **(2)** Alinee el lado derecho de la batería con la línea blanca de la videocámara, y deslice la batería en el sentido de la flecha.

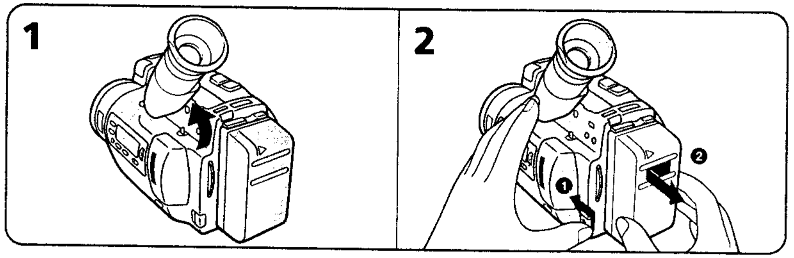


Removing the Battery Pack

(1) Lift up the viewfinder. **(2)** While pressing BATT, slide the battery pack to the left.

Para quitar la batería

(1) Levante el visor. **(2)** Manteniendo presionada BATT, deslice la batería hacia la izquierda.



Installing the Supplied Batteries

Your camcorder is supplied with a lithium battery and two R6 (size AA) batteries. The lithium battery is for the camcorder and the R6 (size AA) batteries are for the Remote Commander.

WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Installing the Lithium Battery into the Camcorder

The lithium battery has a positive (+) side and a negative (–) side as illustrated below. **Be sure to install the lithium battery with the positive side facing out.**

Colocación de las pilas suministradas

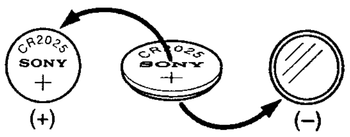
Con esta videocámara se suministran una pila de litio y dos pilas R6 (tamaño AA). La pila de litio es para la videocámara y las R6 (tamaño AA) son para el telemando.

ADVERTENCIA

Si trata mal la pila, puede explotar. No recargue, desarme, ni tire la pila al fuego.

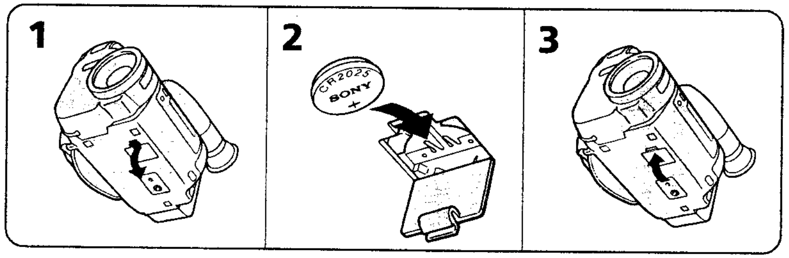
Colocación de la pila de litio en la videocámara

Tenga en cuenta que las pilas de litio poseen una cara positiva (+) y una negativa (–) como se ilustra abajo. **Asegúrese de colocar la pila de litio con la cara positiva hacia afuera.**



To activate the clock, you must insert a lithium battery.
(1) Open the lid of the lithium battery compartment on the bottom of the camcorder.
(2) Install the lithium battery with the positive (+) side facing out. **(3)** Close the lid.

Para activar el reloj, deberá colocar la pila de litio. **(1)** Abra la tapa del compartimiento de la pila de litio que se encuentra en la base de la videocámara. **(2)** Coloque la pila de litio con la cara positiva (+) hacia afuera. **(3)** Cierre la tapa.



See the next page for further information.

Para más información, consulte la página siguiente.

Installing the Supplied Batteries

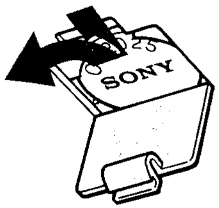
Colocación de las pilas suministradas

To Remove the Lithium Battery

When replacing the lithium battery, keep the battery pack or other power source attached. Overwise, you will need to reset the date and time.
Push the battery down once and pull it out from the holder.

Cuando extraiga la pila de litio

Durante el reemplazo de la pila de litio, mantenga la batería u otra fuente de alimentación conectada. De lo contrario, deberá reajustar la fecha y la hora.
Empuje la pila una vez hacia abajo y extráigala de su compartimiento.



Lithium Battery Life

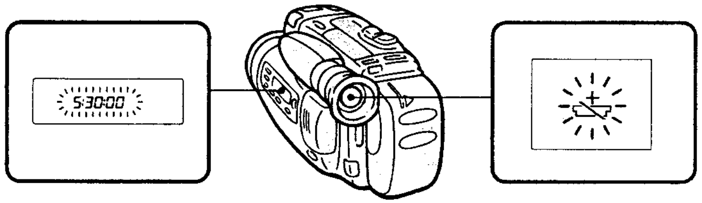
The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the date or the time indicator and the ⚡ indicator flash in the viewfinder for about 5 seconds and the date or the time indicator keeps flashing in the display window when you set the POWER switch to CAMERA.

In this case, **replace the battery with a Sony CR2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**

Duración de la pila de litio

La pila de litio de la videocámara durará aproximadamente 1 año si se utiliza en condiciones normales de funcionamiento. Cuando la pila de litio se debilite o agote, en el visor parpadearán durante unos 5 segundos el indicador de la fecha o la hora y el indicador ⚡, y en la ventanilla visualizadora permanecerá parpadeando el indicador de la fecha o la hora cuando ponga el selector POWER en CAMERA.

En este caso, **reemplace la pila por otra de litio CR2025 Sony. El empleo de otra pila puede suponer un riesgo de incendio o explosión.**



Caution
Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

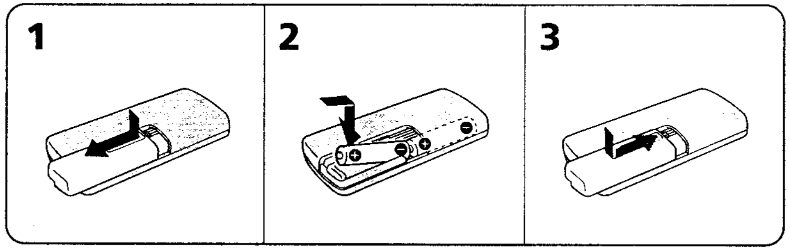
Precaución
Mantenga la pila de litio fuera de alcance de los niños. Si alguien traga la pila, consulte inmediatamente a un médico.

Installing the R6 (size AA) Batteries into the Remote Commander

To use the Remote Commander, you must install two R6 (size AA) batteries. Use the supplied R6 (size AA) batteries.
(1) Remove the battery cover from the Remote Commander. **(2)** Install both of the R6 (size AA) batteries with correct polarity. **(3)** Put the battery cover back onto the Remote Commander.

Colocación de las pilas R6 (tamaño AA) en el telemando

Para utilizar el telemando, deberá colocar dos pilas R6 (tamaño AA). Coloque las pilas R6 (tamaño AA) suministradas.
(1) Quite la tapa del compartimiento de las pilas del telemando. **(2)** Coloque las dos pilas R6 (tamaño AA) con la polaridad correcta.
(3) Cierre la tapa del compartimiento.



Battery Life

The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote commander does not work.

To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

Duración de las pilas

Las pilas en el telemando durarán unos 6 meses si se utilizan en condiciones normales. Cuando las pilas se debiliten o agoten, el telemando no funcionará.

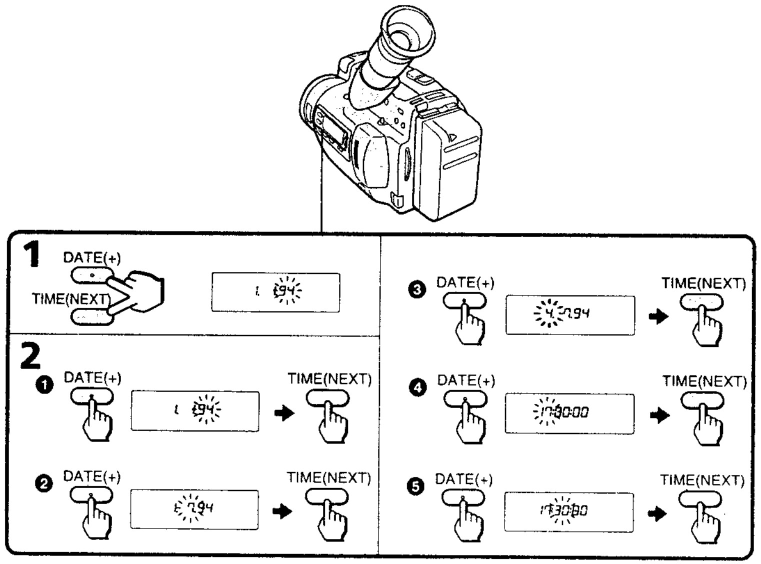
Para evitar daños que podría causar el derrame del electrólito de las pilas
Cuando no vaya a utilizar el telemando durante mucho tiempo, extraiga las pilas.

Setting the Date and Time

Before setting the clock, make sure a power source and lithium battery are installed.
(1) Press DATE (+) and TIME (NEXT) simultaneously for about 3 seconds until "94" flashes in the display window. **(2)** Adjust the digits of the year, month, day, hour and minutes by pressing DATE (+) and TIME (NEXT). To set the year to 1994, there is no need to press DATE (+) in 2-❶. Note that when you keep DATE (+) pressed, the digits advance faster.

Ajuste de la fecha y la hora

Antes de ajustar el reloj, asegúrese de que la fuente de alimentación esté conectada y la pila de litio esté insertada.
(1) Presione simultáneamente DATE(+) y TIME (NEXT) durante unos 3 segundos hasta que en la ventanilla visualizadora parpadee "94". **(2)** Ajuste los dígitos del año, mes, día, hora y minutos presionando DATE (+) y TIME (NEXT). Para ajustar el año a 1994, no será necesario presionar DATE (+) en el paso 2-❶. Si mantiene presionada DATE (+), los dígitos avanzarán con mayor rapidez.



To Correct the Date and Time Settings

Repeat steps 1 and 2.

To Check the Preset Date and Time

Press DATE (+) to display the date indicator in the display window and the viewfinder.
Press TIME (NEXT) to display the time indicator.
When you press the same button again, the indicator goes off.

Para corregir los ajustes de la fecha y la hora

Repita los pasos 1 y 2.

Para comprobar la fecha y la hora ajustadas

Presione DATE (+) de forma que el indicador de la fecha aparezca en la ventanilla visualizadora y en el visor.
Presione TIME (NEXT) para visualizar el indicador de la hora.
Cuando vuelva a presionar la misma tecla, el indicador se apagará.

Note on the setting of the year
When you set the year, each time you press DATE (+) the digits change as follows.
1994 → 1995 → ---- → 2023 ↵

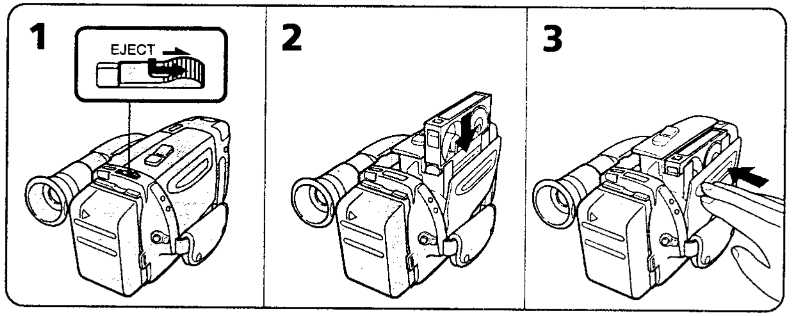
Nota sobre el ajuste del año
Cuando ajuste el año, cada vez que presione DATE (+) los dígitos cambiarán como sigue.
1994 → 1995 → ---- → 2023 ↵

Inserting a Cassette

Make sure that the power source is installed.
When you want to record in the Hi8 system, use Hi8 video cassette **Hi8**.
(1) While pressing the small blue button on the EJECT knob, slide it in the direction of the arrow. The cassette holder automatically lifts up and opens. **(2)** Insert a tape with the window facing out. **(3)** Close the cassette holder by pressing the "PUSH" mark on the cassette holder.

Inserción de un video cassette

Asegúrese de que haya una fuente de alimentación conectada a la videocámara.
Para grabar en el sistema Hi8, utilice un videocassette Hi8 **Hi8**.
(1) Manteniendo presionado el pequeño botón azul en el mando EJECT, deslícelo en el sentido de la flecha. El portacassette se elevará y abrirá automáticamente. **(2)** Inserte un videocassette con la ventanilla hacia afuera. **(3)** Cierre el portacassette presionando la marca "PUSH" en el mismo.



Caution
The cassette holder automatically goes down. Do not let it down by force so as to cause a malfunction.

To Eject the Cassette

While pressing the small blue button on the EJECT knob, slide it in the direction of the arrow.

Precaución
El portacassette se bajará automáticamente. No lo baje a la fuerza, ya que podría producir un mal funcionamiento.

Para explusar el videocassette

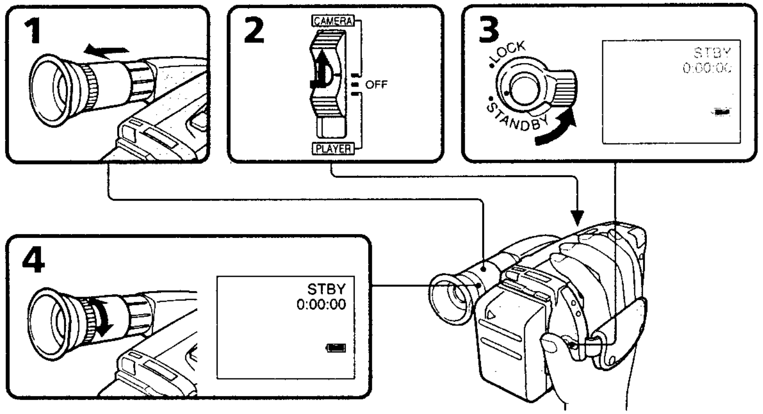
Manteniendo presionado el pequeño botón azul en el mando EJECT, deslícelo en el sentido de la flecha.

Adjusting the Viewfinder Lens

Ajuste de la lente del visor

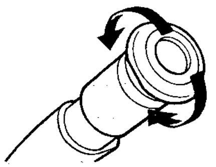
Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is installed to the camcorder.
(1) Pull the viewfinder out until it clicks. **(2)** While pressing the small green button on the POWER switch, slide it to CAMERA. **(3)** Turn STANDBY up. **(4)** Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.

Antes de utilizar la videocámara por primera vez o después de haberla empleado otra persona, ajuste la lente del visor. Asegúrese de que haya una fuente de alimentación conectada a la videocámara.
(1) Compruebe si hay una fuente de alimentación conectada. **(2)** Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta CAMERA. **(3)** Gire STANDBY hacia arriba. **(4)** Gire el anillo de ajuste de la lente del visor hasta que los indicadores en el visor queden nítidamente enfocados.



If you wear glasses
You can bend back the eyecup to get a better view of viewfinder.

Si utiliza gafas
Usted podrá doblar el ocular hacia atrás para ver mejor a través del visor.



Hints for Better Shooting

Consejos para videofilmar mejor

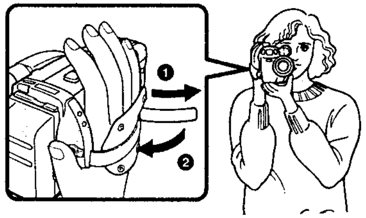
For hand-held shots, you'll get better results holding the camcorder according to the following suggestions:

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. **[a]**
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position (You can lift it up to 90 degrees.) Press REC START/STOP with your left thumb. **[b]**

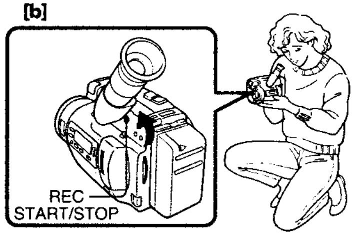
Para videofilmar con la videocámara en las manos, podrá obtener mejores imágenes sujetándola como se indica a continuación:

- Sujete la videocámara firmemente y asegúrela con la correa de la empuñadura de modo que pueda manipular fácilmente la videocámara con el pulgar. **[a]**
- Coloque su codo derecho firmemente contra su costado.
- Coloque su mano izquierda debajo de la videocámara para sostenerla.
- Apoye el ocular del visor de la videocámara firmemente contra su ojo.
- Para determinar el plano horizontal, utilice el cuadro del visor como referencia.
- Para obtener un ángulo de videofilmación interesante, usted también podrá grabar desde una posición baja. Para grabar desde una posición baja, gire el visor hacia arriba. (Podrá levantarlo hasta 90 grados.) Presione REC START/STOP con su pulgar izquierdo. **[b]**

[a]



[b]



Place the camcorder on a flat surface or use a tripod
Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p.81). Make sure the tripod screw is shorter than 6.5 mm (9/32 in).

Coloque la videocámara en una superficie plana o utilice un trípode
Pruebe colocando la videocámara sobre una mesa u otra superficie plana de altura adecuada. Si posee un trípode para cámara fotográfica, podrá emplearlo también con esta videocámara (p.81). Asegúrese de que la longitud del tornillo del trípode sea inferior a 6,5 mm.

See the next page for further information.

Para más información, consulte la página siguiente.

Hints for Better Shooting

Cautions on the viewfinder

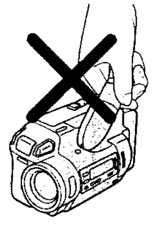
- Do not pick up the camcorder by the viewfinder. **[a]**
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder heats up and may be deformed. **[b]**

Consejos para videofilmar mejor

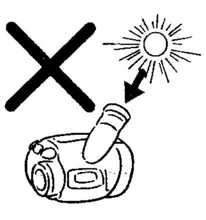
Precauciones sobre el visor

- No sujete la videocámara por el visor. **[a]**
- No deje la videocámara con el visor apuntando hacia el sol. El interior del visor se calentará y es posible que se deforme. **[b]**

[a]



[b]

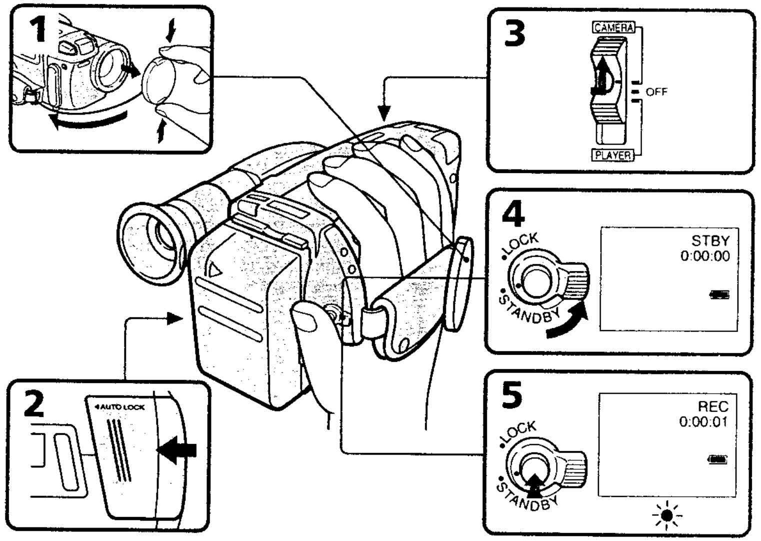


Camera Recording

Videofilmación

Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working perfectly. Make sure that the power source is installed and a cassette is inserted.
(1) Remove the lens cap and clip it on the grip strap. **(2)** Make sure that the AUTO LOCK cover is closed for automatic adjustment. **(3)** While pressing the small green button on the POWER switch, slide it to CAMERA. **(4)** Turn STANDBY up. **(5)** Press START/STOP. The camcorder starts recording. The "REC" indicator appears and the red lamp lights up in the viewfinder.

Antes de realizar videofilmaciones irrepetibles, se recomienda realizar una filmación de prueba a fin de comprobar si la videocámara funciona correctamente. Asegúrese de que haya una fuente de alimentación conectada y un videocassette insertado.
(1) Quite la tapa del objetivo y engánchela en la correa de la empuñadura. **(2)** Asegúrese de que la cubierta AUTO LOCK esté cerrada para los ajustes automáticos. **(3)** Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta CAMERA. **(4)** Gire STANDBY hacia arriba. **(5)** Presione START/STOP. La videocámara comenzará a grabar y en el visor aparecerá el indicador "REC" y se encenderá la lámpara roja.



To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder **(Standby mode)**.

To Finish Recording

Turn STANDBY down and slide the POWER switch to OFF. Close the lens cap and eject the tape.

Para detener momentáneamente la grabación

Presione otra vez START/STOP. En el visor aparecerá el indicador "STBY" **(modo de espera)**.

Para finalizar la grabación

Gire STANDBY hacia abajo y deslice el selector POWER hasta OFF. Coloque la tapa del objetivo y extraiga el videocassette.

See the next page for further information.

Para más información, consulte la página siguiente.

Note on Standby mode
If you leave the camcorder in Standby mode for 5 minutes, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on recording
When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

Note on the tape counter
The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET under DATE (+) and TIME (NEXT).

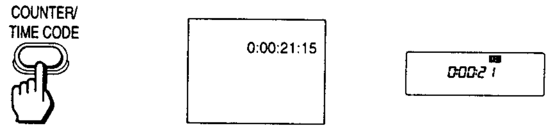
Displaying the RC Time Code during playback
Press COUNTER/TIME CODE. The RC time code appears in the viewfinder and the display window. The frame numbers are not displayed in the display window. You can also display the RC time code during recording by pressing COUNTER/TIME CODE.

Nota sobre el modo de espera
Si deja la videocámara en el modo de espera durante más de 5 minutos, la videocámara se apagará automáticamente. Esto evitará que la batería y el videocassette se desgasten. Para restablecer el modo de espera, gire una vez STANDBY hacia abajo y otra vez hacia arriba. Para comenzar a grabar, presione START/STOP.

Nota sobre la grabación
Cuando grabe desde el comienzo de la cinta, haga que ésta avance unos 15 segundos antes de comenzar la videofilmación actual. Esto evitará que se pierdan las escenas iniciales cuando se reproduzca la cinta.

Nota sobre el contador de la cinta
El contador de la cinta indicará el tiempo de grabación o reproducción. Empléelo como una guía. Es posible que exista una diferencia de varios segundos del tiempo real. Para ajustar el contador a cero, presione COUNTER RESET debajo de DATE (+) y TIME (NEXT).

Visualización del código de tiempo RC durante la reproducción
Presione COUNTER/TIME CODE. El código de tiempo RC aparecerá en el visor y en la ventanilla visualizadora. Los números de cuadro no se visualizarán en la ventanilla visualizadora. También podrá visualizar el código de tiempo RC durante la grabación presionando COUNTER/TIME CODE.



Notes on the RC time code displayed
Bars(----) appear in place of the RC time code when you play back:
- a blank portion of the tape.
- a tape in which the RC time code is illegible because of tape damage or noise.
- a tape recorded with a video camera recorder which does not have the RC time code function.
- the portion of a tape where the RC time code was erased together with the index signal.

Notas sobre la visualización del código de tiempo RC
En lugar del código de tiempo RC aparecerán barras (----) cuando reproduzca:
- una parte en blanco de la cinta.
- una cinta con códigos de tiempo difíciles de leer debido al daño o ruido en la cinta.
- una cinta grabada con una videocámara que no posea función de código de tiempo RC.
- una parte de la cinta donde el código de tiempo RC se haya borrado junto con la señal de índice.

Note on BEEP feature
A beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Note that the beep sound is not recorded on the tape. Several beeps also sound as a warning of any unusual condition of the camcorder.
If you do not want to hear the beep sound, set BEEP to OFF in the menu system (p.32).

When there is a strong wind
Set WIND to ON in the menu system (p.33). The noise from the wind will be reduced. The ⊏⊐ indicator appears in the viewfinder.
After recording, set WIND to OFF. If you leave it ON, the sound may be recorded unnaturally.

Getting a Steady Picture

You can use the Steady Shot function to compensate for camera-shake in the following cases.
- When you zoom in
- When you shoot while moving
- When you shoot from a car window

Set STEADY SHOT to ON. The "◎" indicator appears in the viewfinder and the ((◎)) appears in the display window.

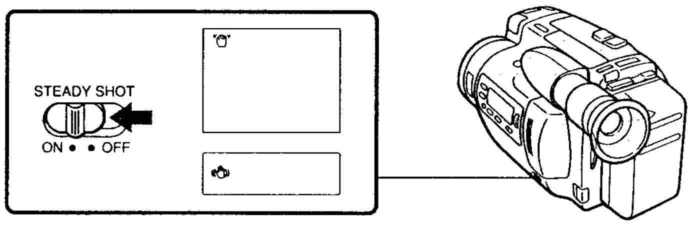
Nota sobre la función BEEP
Cuando conecte la alimentación o cuando comience la grabación, sonará un pitido, y cuando pare la grabación sonarán dos pitidos para confirmar la operación. Tenga en cuenta que los pitidos no se grabarán en la cinta. También sonarán pitidos como advertencia de una condición anormal de la videocámara.
Si no desea oír los pitidos, ajuste BEEP a OFF en el sistema del menú (p.32).

Cuando haya viento fuerte
Ajuste WIND a ON en el sistema del menú (p.33). El ruido del viento se reducirá. En el visor aparecerá el indicador ⊏⊐.
Después de la grabación, ajuste WIND a OFF. De lo contrario, es posible que el sonido no se grabe en forma natural.

Para obtener imágenes estables

Podrá utilizar la función de videofilmación estable para compensar los sacudidos de la videocámara en los casos siguientes.
- Cuando emplee el acercamiento con el zoom
- Cuando videofilme mientras esté moviéndose
- Cuando grabe a través de la ventanilla de un automóvil

Ponga STEADY SHOT en ON. En el visor aparecerá el indicador "◎", y en la ventanilla visualizadora ((◎)).



To Release the STEADY SHOT Function
Set STEADY SHOT to OFF.

Para desactivar la función STEADY SHOT
Ponga STEADY SHOT en OFF.

See the next page for further information.

Para más información, consulte la página siguiente.

When you shoot stationary object with a tripod
Set STEADY SHOT to OFF.

Notes on the Steady Shot function
- The Steady Shot function will not correct excessive camera-shake.
- When you switch the STEADY SHOT, the exposure may vary.

Using the Zoom Feature

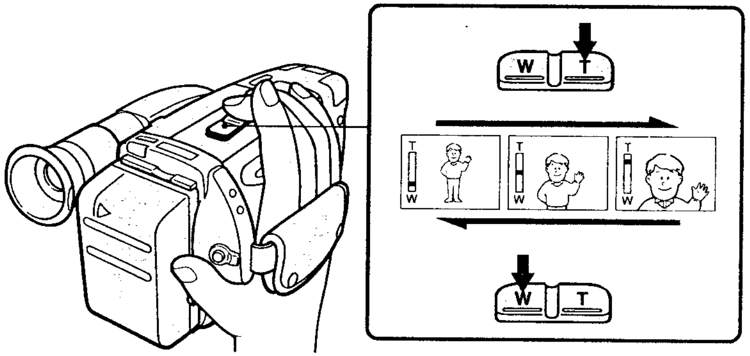
Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use the zoom to focus manually or to decide on a shooting angle before you start recording. For more professional-looking recordings, use the zoom sparingly.
T side : for telephoto (subject appears closer)
W side : for wide-angle (subject appears farther away)

Cuando videofilme un motivo estacionario con un trípode
Ponga STEADY SHOT en OFF.

Notas sobre la función de videofilmación estable
- Con esta función no podrá corregir los sacudidos excesivos de la videocámara.
- Cuando cambie el interruptor STEADY SHOT, es posible que la exposición varíe.

Empleo del zoom

El zoom es una técnica de videofilmación que le permite cambiar el tamaño del motivo en la pantalla. Además, puede emplear el zoom para enfocar manualmente o para decidir el ángulo de filmación antes de videofilmar.
Para filmaciones de aspecto más profesional, utilice el zoom en forma limitada.
Lado T : para telefoto (el motivo se ve cercano)
Lado W : para gran angular (el motivo se ve lejano)



Making the Sound "zoom"

When you zoom in or zoom out, you can also set the sound to "zoom" along with the picture. To make the sound to "zoom", set ZOOM MIC to ON in the menu system (p.33). The ZOOM MIC indicator appears in the viewfinder.
When you "zoom" the sound, the sound is recorded in monaural.

"Zoom" del sonido

Cuando cambie el tamaño del motivo, también podrá cambiar el volumen del sonido de acuerdo con el tamaño del motivo. Para activar esta función, ajuste ZOOM MIC a ON en el sistema del menú (p.33). En el visor aparecerá el indicador ZOOM MIC.
Cuando cambie el volumen del sonido, éste se grabará en monoaural.

Zooming speed
Press the power zoom button firmly for a high-speed zoom. Press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus is sharp.
You can shoot a subject that is at least 80 cm (about 2.6 feet) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inches) in the wide-angle position.

Manual focusing in macro
You can also shoot with manual focus while doing close-ups (p.36).

Velocidad del zoom
Presione a fondo la tecla del zoom motorizado para efectuar el zoom a gran velocidad y suavemente para hacerlo a una velocidad relativamente lenta.

Cuando videofilme un motivo empleando el acercamiento con el zoom
Si no puede enfocar nítidamente cuando videofilme con el zoom en el extremo del telefoto, presione el lado W de la tecla del zoom motorizado hasta enfocar nítidamente.
Usted podrá videofilmar un motivo que esté por lo menos a 80 cm de la superficie del objetivo en la posición de telefoto, y a 1 cm en la de gran angular.

Enfoque manual en macro
Usted también podrá filmar un motivo con enfoque manual mientras realice un primer plano (p.36).

Checking the Recorded Picture in the Viewfinder

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.
(1) While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Press EDITSEARCH. Press the - (⊜) side momentarily, the last few seconds of the recorded portion plays back **(Rec. Review)**.
Keep pressing EDITSEARCH to play back the last recorded portion **(Edit Search)**.
+ side: to view the forward playback picture
– side: to view the reverse playback picture

To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

Verificación de la imagen grabada en el visor

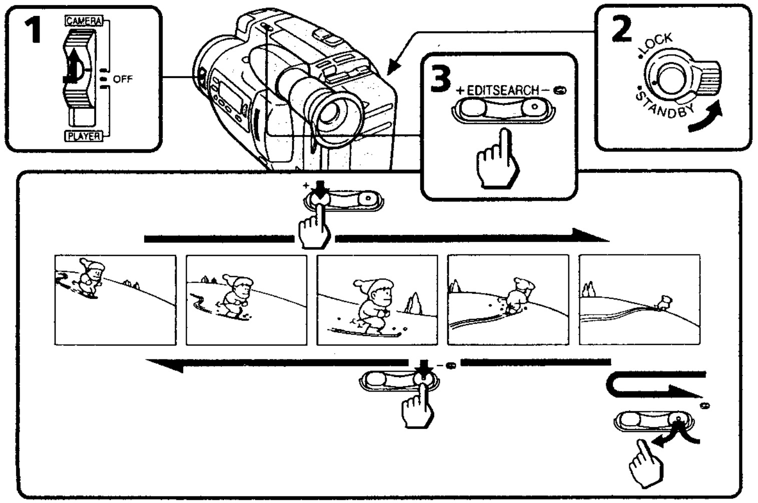
Utilizando EDITSEARCH, usted podrá revisar la última escena grabada o comprobar la imagen grabada en el visor.
(1) Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta CAMERA. **(2)** Gire STANDBY hacia arriba.
(3) Presione EDITSEARCH. Presione momentáneamente el lado - (⊜). Se reproducirán los últimos segundos de la parte filmada **(Revisión de la grabación)**.
Mantenga presionada EDITSEARCH para reproducir la última parte grabada **(Búsqueda para la edición)**
Lado +: para ver las imágenes en sentido progresivo
Lado –: para verlas en sentido regresivo

Para cesar la reproducción

Suelte EDITSEARCH.

Para reanudar la grabación

Presione START/STOP. La grabación se iniciará desde el punto en el que soltó EDITSEARCH. Mientras no extraiga el videocassette, la transición entre la última escena grabada y la siguiente será uniforme.



Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

Connect headphones (not supplied) to the headphone jack ∩. While pressing the small green button on the POWER switch, slide it to PLAYER, and play back the tape (p.25).

Para escuchar el sonido durante la contemplación de las imágenes en el visor

Conecte unos auriculares (no suministrados) a la toma ∩. Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta PLAYER para reproducir la cinta (p.25).

Connections for Playback

You can use this camcorder as a VCR by connecting to your TV for playback. There are two ways to connect your camcorder.

- Connecting to a TV with Video/Audio input jacks or a VCR
- Connecting to a TV without Video/Audio input jacks

Conexiones para la reproducción

Usted podrá utilizar esta videocámara para que funcione como videograbadora para reproducción conetándola a su televisor. Existen dos métodos para conectar la videocámara.

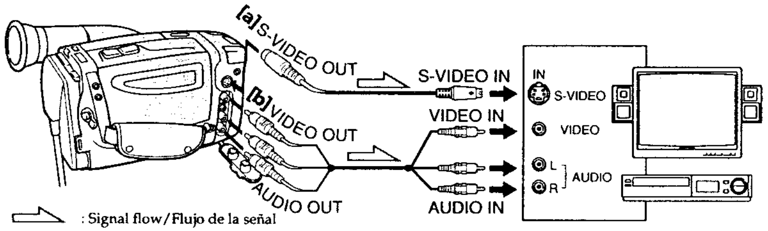
- Conexión a un televisor provisto de tomas de entrada de vídeo/audio o a una videograbadora
- Conexión a un televisor desprovisto de tomas de entrada de vídeo/audio

Connecting to a TV with Video/ Audio Input Jacks or a VCR

Connect the camcorder to your TV by using the supplied connecting cable. Set the TV/VCR selector to VCR on the TV. When connecting the camcorder to VCR, set the input selector on the VCR to LINE.
If you are going to connect the camcorder using the S video cable **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

Conexión a un televisor provisto de tomas de entrada de vídeo/ audio o a una videograbadora

Conecte la videocámara al televisor empleando el cable conector suministrado. Ponga el selector TV/VCR del televisor en VCR. Cuando conecte la videocámara a una videograbadora, ponga el selector de entrada de la videograbadora en LINE. Cuando conecte la videocámara empleando el cable de vídeo S **[a]**, no será necesario conectar la clavija amarilla (vídeo) del cable conector de audio/vídeo **[b]**.



If your TV or VCR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural.

See the next page for further information.

Si su televisor o videograbadora es de tipo monoaural, conecte solamente la clavija blanca para audio a la videocámara y al televisor o la videograbadora. Con esta conexión el sonido será monoaural.

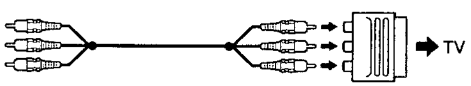
Para más información, consulte la página siguiente.

Connections for playback

Conexiones para la reproducción

If your TV has a 21-pin connector (EUROCONNECTOR)
Use the supplied 21-pin adaptor.

Si su televisor posee conector de 21 terminales (EUROCONNECTOR)
Utilice el adaptador de 21 terminales suministrado.

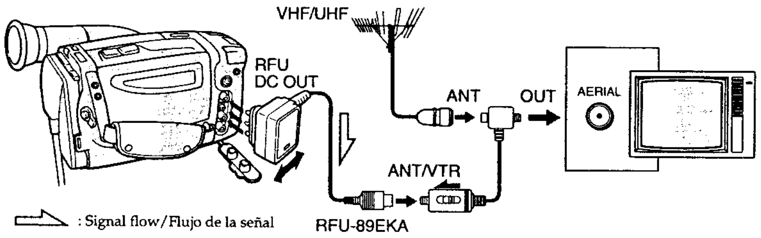


Connecting to a TV without Video/Audio Input Jacks

Connect the camcorder to the TV using an appropriate RFU adaptor such as the RFU-89EKA (not supplied). For details on connection, refer to the instruction manual of the RFU adaptor.
The following illustrates the connection of the RFU-89EKA as an example.

Conexión a un televisor desprovisto de tomas de entrada de vídeo/audio

Conecte la videocámara al televisor empleando un adaptador de RF apropiado como el RFU-89EKA (no suministrado). Para los detalles sobre la conexión, consulte el manual de instrucciones del adaptador de RF.
La ilustración siguiente es un ejemplo de conexión en el que se emplea un adaptador de RF RFU-89EKA.

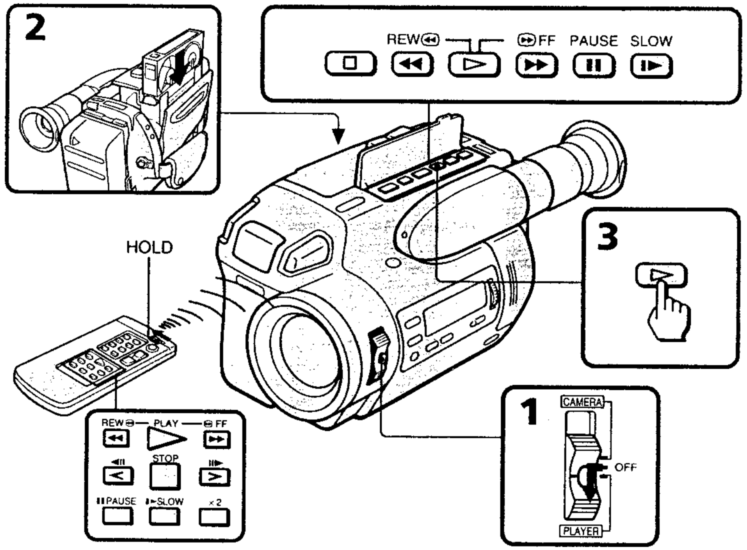


Playing Back a Tape

Reproducción de cintas

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VCR (p.23). It is recommended to use the house current as the power source (p.29). You can use the supplied Remote Commander to control playback.
(1) While pressing the small green button on the POWER switch, slide it to PLAYER. **(2)** Insert the recorded tape with the window facing out.
(3) Press ▷. Playback starts.

Usted podrá ver las imágenes reproducidas en el visor y también en la pantalla de un televisor si conecta la videocámara al televisor o a una videograbadora (p.23). Se recomienda utilizar la corriente de la red como fuente de alimentación (p.29). También podrá controlar la reproducción con el telemando suministrado.
(1) Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta PLAYER. **(2)** Inserte una cinta grabada con la ventanilla hacia afuera. **(3)** Presione ▷.
Se iniciará la reproducción.



To stop playback, press □.

To rewind the tape, press ◀◀.

To advance the tape rapidly, press ▶▶.

Para cesar la reproducción, presione □.

Para rebobinar la cinta, presione ◀◀.

Para hacer que la cinta avance rápidamente, presione ▶▶.

See the next page for further information.

Para más información, consulte la página siguiente.

Playing Back a Tape

Using the Remote Commander

You can control playback using the supplied Remote Commander.
Before using the Remote Commander, insert the R6 (size AA) batteries and slide the HOLD switch in the opposite direction to the arrow.

Various Playback Modes

To locate a scene (Picture search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (Skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture at double speed
For double speed playback in the reverse direction, press </◀II, then press x2 on the Remote Commander during normal playback. For double speed playback in the forward direction, press >/II▶, then press x2 during normal playback. To resume normal playback, press ▷.

To view a still picture (playback pause)
Press II during playback. To resume playback, press II or ▷.

To view the picture at 1/5 speed (slow playback)
For reverse slow playback, press </◀II, then press I▶ during normal playback. For forward slow playback, press >/II▶, then press I▶ during normal playback. To resume normal playback, press ▷.

To view the picture frame-by-frame
Press </◀II or >/II▶ in still mode. If you keep pressing the button, you can view the picture at 1/25 speed.
To resume normal playback, press ▷.

To view the picture in a sequence of stop-motion images
Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture playback in the forward (+) or reverse (-) direction.

To change the playback direction
Press </◀II for reverse direction or >/II▶ for forward direction during playback. To resume normal playback, press ▷.

Reproducción de cintas

Utilización del telemando

Usted podrá controlar la reproducción con el telemando suministrado. Antes de utilizarlo, inserte las pilas R6 (tamaño AA) y deslice el interruptor HOLD en el sentido opuesto al de la flecha.

Diversos modos de reproducción

Para localizar una escena (búsqueda de imagen)
Mantenga presionada ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, suelte la tecla.

Para ver las imágenes a gran velocidad durante el avance rápido o el rebobinado (exploración con salto)
Mantenga presionada ◀◀ durante el rebobinado o ▶▶ durante el avance de la cinta. Para reanudar la reproducción normal, presione ▷.

Para ver la imagen a velocidad doble
Para la reproducción a velocidad doble en el sentido regresivo, presione </◀II, y después x2 del telemando durante la reproducción normal. Para la reproducción a velocidad doble en el sentido progresivo, presione >/II▶, y después x2 durante la reproducción normal. Para reanudar la reproducción normal, presione ▷.

Para ver una imagen fija (reproducción en pausa)
Presione II durante la reproducción. Para reanudar la reproducción, presione II o ▷.

Para ver la imagen a velocidad 1/5 de la normal (reproducción a cámara lenta)
Para la reproducción a cámara lenta en el sentido regresivo, presione </◀II, y después I▶ durante la reproducción normal. Para reproducir progresivamente a cámara lenta, presione >/II▶, y después I▶ durante la reproducción normal.
Para reanudar la reproducción normal, presione ▷.

Para ver las imágenes fotograma tras fotograma
Presione </◀II o >/II▶ en el modo de imagen fija. Si la mantiene presionada, podrá ver la imagen a velocidad 1/25 de la normal. Para reanudar la reproducción normal, presione ▷.

Para ver una secuencia de imágenes a cámara lenta
Presione EDITSEARCH en el modo de reproducción en pausa. Si la mantiene presionada, podrá ver las imágenes en el sentido progresivo (+) o regresivo (-).

Para cambiar el sentido de la reproducción
Durante la reproducción, presione </◀II para el sentido regresivo o >/II▶ para el sentido progresivo. Para reanudar la reproducción normal, presione ▷.

Notes on playback
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.
- The sound is muted in the various playback modes. It can be heard in the double speed forward playback, but is a little noisy.
- Noise may appear in still or slow playback mode. You can adjust the picture by displaying the STILL ADJ or SLOW ADJ mode setting in the menu system.(p.32)
- Horizontal noise appears at the center of the screen when you play back a tape in reverse if the RC time code or the Data Code is displayed on the screen . This is normal.

To display the viewfinder screen indicators on the TV
Press DISPLAY.
To erase the indicators, press DISPLAY again.

To Select the Monitor Sound

Normally set HiFi SOUND to STEREO in the menu system. When you playback a dual soundtrack tape, set it to 1 or 2 in the menu system.

Displaying the Date or Time When You Recorded -Data Code Function

Even if you did not record the date or time when you were recording, you can display the date or time when you recorded (Data Code) on the TV during playback or editing. The Data Code is also displayed in the viewfinder and the display window.

To Display the Date When You Recorded

Press DATE (+) on the camcorder, or press DATA CODE on the Remote Commander.
To make the date disappear, press DATE (+) again or DATA CODE twice.

See the next page for further information.

Notas sobre la reproducción
- Cuando el modo de imagen fija dure 5 minutos o más, la videocámara pasará automáticamente al modo de parada.
- En los diversos modos de reproducción, el sonido se silenciará. El sonido podrá escucharse durante la reproducción a velocidad doble en sentido progresivo, pero será un poco ruidoso.
- Es posible que aparezca ruido en el modo de reproducción en pausa o a cámara lenta. En este caso, podrá ajustar la imagen visualizando el ajuste de modo STILL ADJ o SLOW ADJ en el sistema del menú (p.32).
- Es normal que aparezca ruido horizontal en el centro de la pantalla si reproduce regresivamente una cinta cuando esté visualizándose el código de tiempo RC o de datos.

Para visualizar los indicadores de la pantalla del visor en el televisor
Presione DISPLAY.
Para borrar los indicadores, vuelva a presionar DISPLAY.

Para seleccionar el sonido de escucha

Normalmente deje ajustado HiFi SOUND a STEREO en el sistema del menú. Cuando reproduzca una cinta grabada con el sonido doble, ajústelo a 1 o 2 en el sistema del menú.

Visualización de la fecha o la hora de la grabación - Función de código de datos

Aunque no haya grabado la fecha o la hora durante la videofilmación, podrá visualizarla después (código de datos) en el televisor durante la reproducción o la edición. El código de datos podrá visualizarse también en el visor y en la ventanilla visualizadora.

Para visualizar la fecha de la grabación

Presione DATE (+) de la videocámara o DATA CODE del telemando.
Para hacer desaparecer la fecha, presione nuevamente DATE (+) o presione dos veces DATA CODE.

Para más información, consulte la página siguiente.

Playing Back a Tape

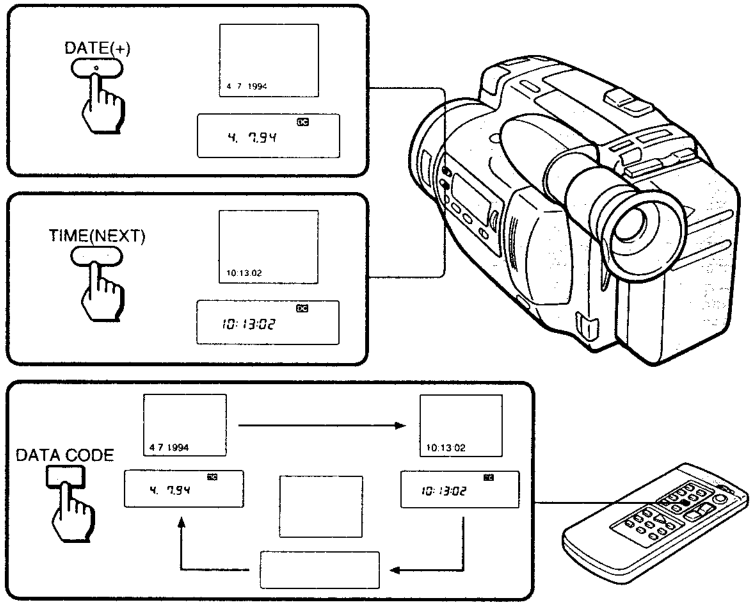
Reproducción de cintas

To Display the Time When You Recorded

Press TIME (NEXT) on the camcorder, or press DATA CODE on the Remote Commander twice. To make the time disappear, press it again.

Para visualizar la hora de la grabación

Presione TIME (NEXT) de la videocámara, o presione dos veces DATA CODE del telemando. Para hacer desaparecer la hora, vuelva a presionarla.



When bars (--:--:--) appear

- A blank portion of the tape is being played back.
- The tape was recorded by a camcorder without the Data Code function.
- The tape was recorded by a camcorder without having date and time set.
- The tape is unreadable due to tape damage or noise.

Las barras (--:--:--) aparecerán cuando

- reproduzca una parte en blanco de la cinta.
- la cinta se haya grabado con una videocámara que no posea función de código de datos.
- la cinta se haya grabado sin haber ajustado la fecha ni la hora en la videocámara.
- sea difícil de leer la cinta debido al daño o ruido en la misma.

Advanced Operations

Using Alternate Power Sources

Operaciones avanzadas

Utilización de fuentes de alimentación alternativas ▶

You can choose any of the following power sources for your camcorder: battery pack (p.6), house current, alkaline batteries, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V35/V35A (supplied), AC-S10
Outdoors	Battery pack	Battery pack NP-66 (supplied), NP-77H, NP77-HD, NP-66H, NP-55H
In the car	12 V or 24 V car battery	DC pack DCP-77

Con esta videocámara podrá elegir cualquiera de las siguientes fuentes de alimentación: batería (p.6), corriente de la red, pilas alcalinas y batería de un automóvil de 12/24 V.
Elija la fuente de alimentación apropiada de acuerdo con el lugar donde desee utilizar la videocámara.

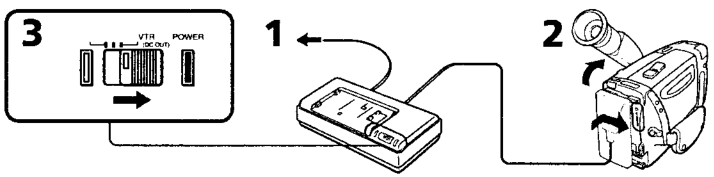
Lugar	Fuente de alimentación	Accesorio necesario
Interiores	Corriente de la red	Adaptador de CA AC-V35/V35A (suministrado), AC-S10
Exteriores	Batería	Batería NP-66 (suministrada), NP-77H, NP-77HD, NP-66H, NP-55H
En un automóvil	Batería de automóvil de 12 o 24 V	Paquete de CC DCP-77

Using House Current

To use the supplied AC-V35/V35A AC power adaptor:
(1) Connect the AC power adaptor to a wall outlet. **(2)** Lift up the viewfinder. Align the right side of the connecting plate with the white line on the camcorder, then slide the connecting plate in the direction of the arrow. **(3)** Set the selector of the AC power adaptor to the VTR (DC OUT) position.

Utilización con la corriente de la red

Utilice el adaptador de CA AC-V35/V35A suministrado:
(1) Conecte el adaptador de CA a una toma de la red. **(2)** Levante el visor. Alinee el lado derecho de la placa conectora con la línea blanca de la videocámara, y deslice la placa en el sentido de la flecha. **(3)** Ponga el selector del adaptador de CA en la posición VTR (DC OUT).



WARNING:
MAINS CORD MUST ONLY BE CHANGED AT QUALIFIED SERVICE SHOP.

PRECAUTIONS:
THE SET IS NOT DISCONNECTED FROM THE AC POWER SOURCE (MAINS) AS LONG AS IT IS CONNECTED TO THE WALL OUTLET, EVEN IF THE SET ITSELF HAS BEEN TURNED OFF.

See the next page for further information.

ADVERTENCIA:
EL CABLE DE ALIMENTACIÓN DE LA RED DEBERÁ CAMBIARSE SOLAMENTE EN UNA ESTACIÓN DE SERVICIOS CUALIFICADO.

PRECAUCIÓN:
ESTE APARATO NO SE DESCONECTARÁ DE LA FUENTE DE ALIMENTACIÓN DE CA (RED) MIENTRAS ESTÉ ENCHUFADO EN UNA TOMA DE LA MISMA, INCLUSO AUNQUE HAYA DESCONECTADO SU ALIMENTACIÓN.

Para más información, consulte la página siguiente.

Using Alternate Power Sources

Note on the POWER lamp
The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.

To remove the adaptor
The adaptor is removed in the same way as the battery pack (P.8).

Options for Charging the Battery Pack

AC-S10 AC power adaptor:
You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack
The DC pack is removed in the same way as the battery pack (p.8).

Using Alkaline Batteries

Use the EBP-77 battery case (not supplied) with 12 R6 (AA) size alkaline batteries (not supplied). Insert the batteries in the battery case, and attach the battery case to the battery mounting surface of the camcorder.

To remove the battery case
The battery case is removed in the same way as the battery pack (p.8).

Utilización de fuentes de alimentación alternativas

Nota sobre la lámpara POWER
Es normal que esta lámpara permanezca encendida durante un momento aunque desenchufe el adaptador después de utilizarlo.

Para quitar el adaptador
Quítelo igual que la batería (p.8).

Opciones para cargar la batería

Adaptador de CA AC-S10:
Como este adaptador posee función de descarga, usted podrá cargar la batería independientemente de que ésta se haya agotado o no.

Utilización con la batería de un automóvil

Emplee un paquete de CC DCP-77 (no suministrado). Conecte el cable del paquete de CC a la toma del encendedor de cigarrillos de un automóvil (12 o 24 V). Conecte el paquete de CC a la superficie de montaje de la batería de la videocámara.

Para quitar el paquete de CC
Quítelo igual que la batería (p.8).

Utilización con pilas alcalinas

Emplee una caja de pilas EBP-77 (no suministrada) con 12 pilas alcalinas R6 (tamaño AA) (no suministradas). Inserte las pilas en la caja y fíjela a la superficie de montaje de la batería de la videocámara.

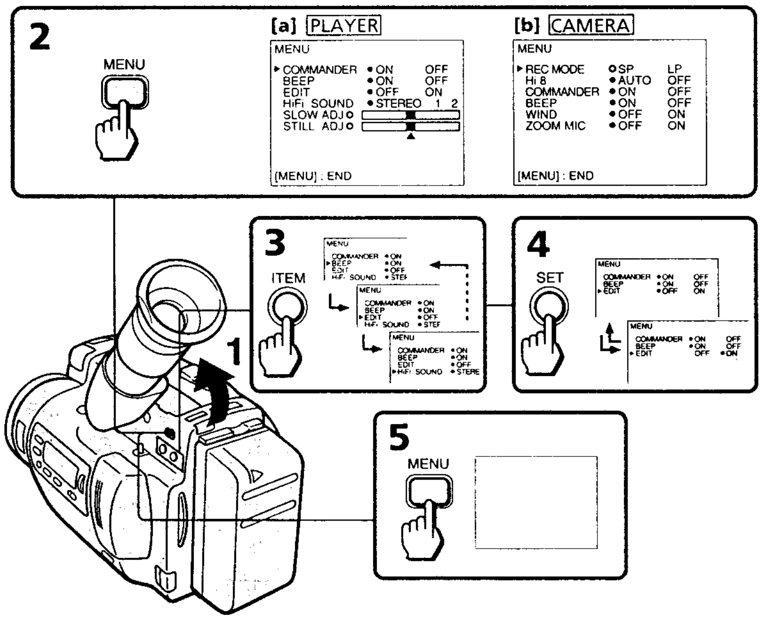
Para quitar la caja de pilas
Quítela igual que la batería (p.8).

Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions. **(1)** Lift up the viewfinder. **(2)** Press MENU to display the menu in the viewfinder. **(3)** Press ITEM to move the cursor ▶ and select the desired item. **(4)** Press SET to move the cursor ● (or O) and set the desired mode. If you want to change the other modes, repeat steps 3 and 4.
(5) Press MENU to erase the menu display.

Cambio de los ajustes de modo

Usted podrá cambiar los ajustes de modo en el sistema del menú para disfrutar más de las funciones de la videocámara.
(1) Levante el visor. **(2)** Presione MENU para visualizar el menú en el visor. **(3)** Presione ITEM para mover el cursor ▶ y seleccione el ítem deseado. **(4)** Presione SET para mover el cursor ● (o O) y ajústelo al modo deseado. Cuando desee cambiar a otro modo, repita los pasos 3 y 4. **(5)** Presione MENU para borrar la visualización del menú.



About the previous mode settings
When you detach the battery:
- The REC MODE setting is retained (displayed with cursor O).
- The other mode settings are saved for 5 minutes (displayed with cursor ●).
  However, these settings are canceled if the lithium battery is exhausted.

Cancelación de los ajustes anteriores de modo
Cuando quite la batería:
- El ajuste de REC MODE se mantendrá (visualizado con el cursor O).
- Los demás ajustes se almacenarán durante 5 minutos (visualizados con el cursor ●).
  Sin embargo, estos ajustes se cancelarán si la pila de litio se agote.

Changing the Mode Settings

Selecting the Mode Setting of Each Item

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander for the camcorder.

BEEP <ON/OFF>
- Select ON to hear a beep sound when starting or stopping recording, confirming the operation.
- Select OFF when you do not want to hear the beep sound.

Options displayed in VTR mode only

EDIT <OFF/ON>
- Select OFF when using the camcorder just for playing back, not for editing.
- Select ON to minimize the picture deteriorations when playing back to edit.

HiFi SOUND <STEREO/ 1 / 2 >
- Normally select STEREO.
- Select 1 or 2 to play back a dual soundtrack tape.

SLOW ADJ
Select this mode to adjust the playback picture when noise bands appear at the top or bottom of the picture during slow mode (p.52).

STILL ADJ
Select this mode to adjust the playback picture when vertical shaking occurs during still mode (p.52).

Options displayed in CAMERA mode only

REC MODE <SP/LP>
- Select SP when recording in SP mode.
- Select LP when recording in LP mode.

Hi8 <AUTO/OFF>
- Normally select AUTO to have the camcorder automatically set the recording mode (Hi8 or standard 8mm) depending upon cassette type being used.
- Select OFF to record a Hi8 tape in standard 8 mm format. See page 57 for details about cassette types.

Cambio de los ajustes de modo

Selección de los ajustes de modo en cada ítem

COMMANDER <ON/OFF>
- Seleccione ON cuando desee emplear el telemando suministrado para controlar la videocámara.
- Seleccione OFF cuando no vaya a emplear el telemando.

BEEP <ON/OFF>
- Seleccione ON para oír el pitido cuando comience o pare la videofilmación para confirmar la operación.
- Seleccione OFF si no desea oír el pitido.

Opciones visualizadas sólo en el modo VTR (videograbadora)

EDIT <OFF/ON>
- Seleccione OFF cuando utilice la videocámara sólo para la reproducción (no para la edición).
- Seleccione ON para mantener al mínimo la degradación de la imagen durante la reproducción para la edición.

HiFi SOUND <STEREO/ 1 / 2 >
- Normalmente seleccione STEREO.
- Seleccione 1 o 2 para reproducir una cinta grabada con sonido doble.

SLOW ADJ
Seleccione este modo para ajustar la imagen reproducida cuando en la parte superior o inferior de la imagen aparezcan bandas de ruido durante el modo de reproducción a cámara lenta (p.52).

STILL ADJ
Seleccione este modo para ajustar la imagen reproducida cuando la imagen fija sufra sacudidas verticales (p.52).

Opciones visualizadas sólo en el modo CAMERA (videofilmación)

REC MODE <SP/LP>
- Seleccione SP para grabar en el modo SP.
- Seleccione LP para grabar en el modo LP.

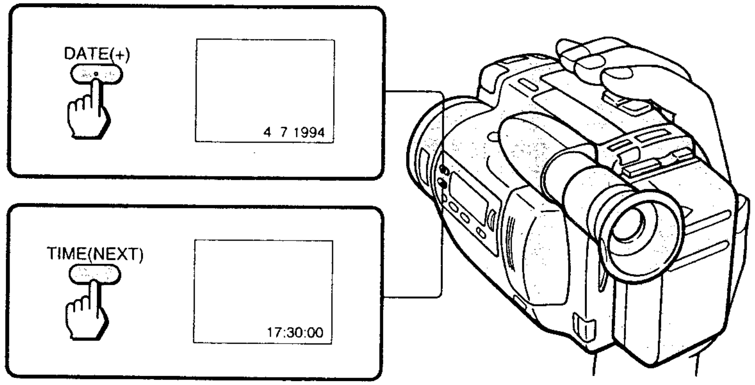
Hi8 <AUTO/OFF>
- Normalmente seleccione AUTO para que la videocámara elija automáticamente el modo de grabación (Hi8 u 8mm estándar) de acuerdo con el tipo de videocassette empleado.
- Seleccione OFF para grabar una cinta Hi8 en el formato de 8mm estándar. Con respecto a los tipos de videocassettes, consulte la página 57.

WIND <ON/OFF>
- Select ON to reduce wind noise when recording.
- Select OFF otherwise.

ZOOM MIC <ON/OFF>
- Select ON when recording making the sound "zoom" along with the picture.
- Select OFF when recording the usual Hi-Fi stereo sound regardless of zooming.

Recording the Date or Time

In CAMERA mode, press DATE (+) or TIME (NEXT). You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.



To Stop Recording with the Date or Time

Press DATE (+) or TIME (NEXT) again. Recording continues.

WIND <ON/OFF>
- Seleccione ON para reducir el ruido del viento durante la videofilmación.
- En caso contrario, seleccione OFF.

ZOOM MIC <ON/OFF>
- Seleccione ON para cambiar el volumen del sonido de acuerdo con la imagen.
- Seleccione OFF cuando grabe el sonido estéreo de alta fidelidad independientemente del zoom.

Grabación de la fecha o la hora

En el modo CAMERA, presione DATE (+) o TIME (NEXT). Usted podrá grabar con las imágenes la fecha o la hora visualizada en el visor. La fecha y la hora no podrán grabarse al mismo tiempo. Además de los indicadores de la fecha y la hora, no se grabará ninguno de los demás indicadores del visor.

Para cesar la grabación de la fecha o la hora

Vuelva a presionar DATE (+) o TIME (NEXT). La grabación de las imágenes continuará.

Fade-in and Fade-out

You can fade in or fade out to give your recording a professional appearance. When fading in, the picture will gradually appear from black (FADER) or mosaic (M.FADER). The sound will also gradually increase. When fading out, the picture will gradually fade to black or mosaic. The sound will also decrease.

When Fading in [a]
(1) During the camcorder is in Standby mode, press FADER. The FADER indicator starts flashing. **(2)** Press START/STOP to start recording. The FADER indicator stops flashing.

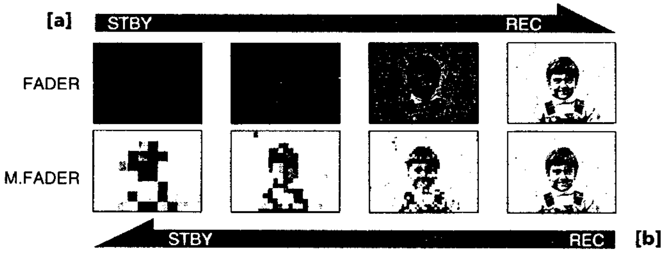
When Fading out [b]
(1) During recording, press FADER. The FADER indicator starts flashing. **(2)** Press START/STOP to stop recording. The FADER indicator stops flashing.

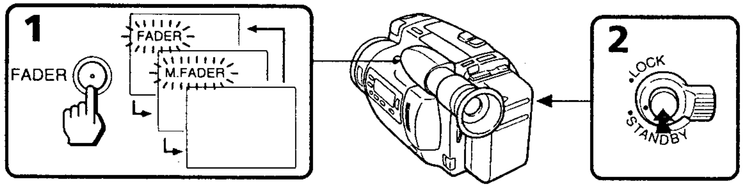
Aumento gradual y desvanecimiento

Usted podrá aumentar o desvanecer una imágen con sonido para dar a su videofilmación un aspecto profesional. Cuando realice el aumento gradual, la imagen aparecerá gradualmente desde un fondo negro (FADER) o mosaico (M.FADER) mientras que el sonido también aumenta gradualmente. Cuando realice el desvanecimiento, la imagen desaparecerá gradualmente hasta convertirse en una pantalla negra o mosaico mientras disminuye el sonido.

Aumento gradual [a]
(1) Mientras la videocámara esté en el modo de espera, presione FADER. El indicador FADER comenzará a parpadear. **(2)** Presione START/STOP para iniciar la videofilmación. El indicador FADER dejará de parpadear.

Desvanecimiento [b]
(1) Durante la videofilmación, presione FADER. El indicador FADER comenzará a parpadear. **(2)** Presione START/STOP para parar la videofilmación. El indicador FADER dejará de parpadear.





To Cancel the Fade-in/out Function
Before pressing START/STOP, press FADER once or twice until you have neither the FADER nor M.FADER indicator in the viewfinder.

When the date/time indicator is displayed.
The date/time does not fade in nor fade out.

Para cancelar la función de aumento gradual/desvanecimiento
Antes de presionar START/STOP, presione una o dos veces FADER hasta que el indicador FADER o M.FADER desaparezca del visor.

Cuando se visualice el indicador de la fecha/hora
La fecha/hora no aumentará gradualmente ni se desvanecerá.

Selecting Automatic or Manual Adjustment Modes

The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for creative recording.

Automatic Mode

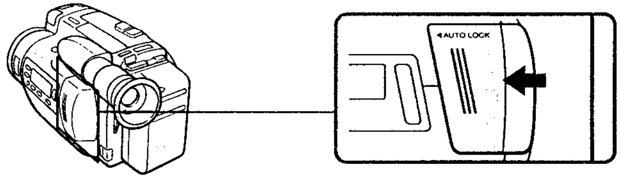
Close the AUTO LOCK cover. In AUTO LOCK mode, the camcorder adjusts the focus, exposure and white balance automatically.

Selección del modo de ajuste automático o manual

Las funciones automáticas de la videocámara le ofrecerán una operación sin problemas en la mayoría de las condiciones de videofilmación. Sin embargo, en ciertas circunstancias, el ajuste manual será mejor para lograr una grabación más creativa.

Modo de ajuste automático

Cierre la cubierta AUTO LOCK. En el modo AUTO LOCK la videocámara ajustará automáticamente el enfoque, la exposición y el equilibrio del blanco.

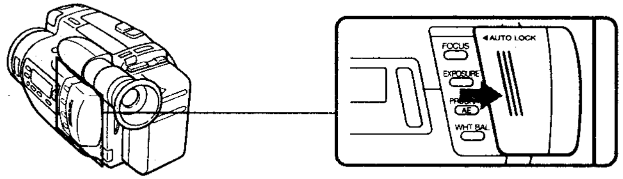


Manual Adjustment Mode

Open the AUTO LOCK cover until it clicks. In manual mode, you can adjust the focus, exposure, and white balance manually and select from four PROGRAM AE modes to fit the shooting situation.
Even if in manual mode, the settings which were not in manual adjustment mode remain the same as when in automatic adjustment mode.

Modo de ajuste manual

Abra la cubierta AUTO LOCK hasta que chasquee. En el modo de ajuste manual usted podrá ajustar manualmente el enfoque, la exposición y el equilibrio del blanco, y seleccionar uno de los cuatro modos PROGRAM AE de acuerdo con la condición de videofilmación.
En el modo de ajuste manual, los ajustes que no se hayan realizado manualmente permanecerán igual que en el modo de ajuste automático.



About the previous settings
Manual settings are saved in the following case:
- When you set the POWER switch to OFF.
- When you resume automatic mode after you make manual adjustments and then select manual mode again.

However, manual settings are canceled if more than 5 minutes pass after you have detached the battery.

Sobre los ajustes anteriores
Los ajustes manuales se mantendrán en los casos siguientes.
- Cuando ponga el selector POWER en OFF.
- Cuando reajuste al modo de ajuste automático después de haber realizado ajustes manuales y después vuelva a seleccionar el modo de ajuste manual.

Sin embargo, los ajustes manuales se cancelarán cuando hayan transcurrido más de 5 minutos después de haber extraído la batería.

Focusing Manually

Enfoque manual

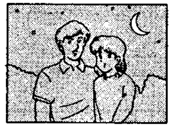
When to Use Manual Focus

Use manual focus under the following conditions:

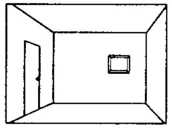
Cuándo utilizar el enfoque manual

En los casos siguientes enfoque manualmente.

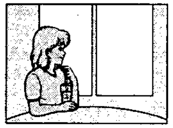
[a]



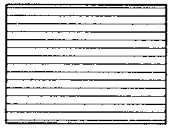
[b]



[c]



[d]



- Insufficient light **[a]**
- Subjects with little contrast-walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

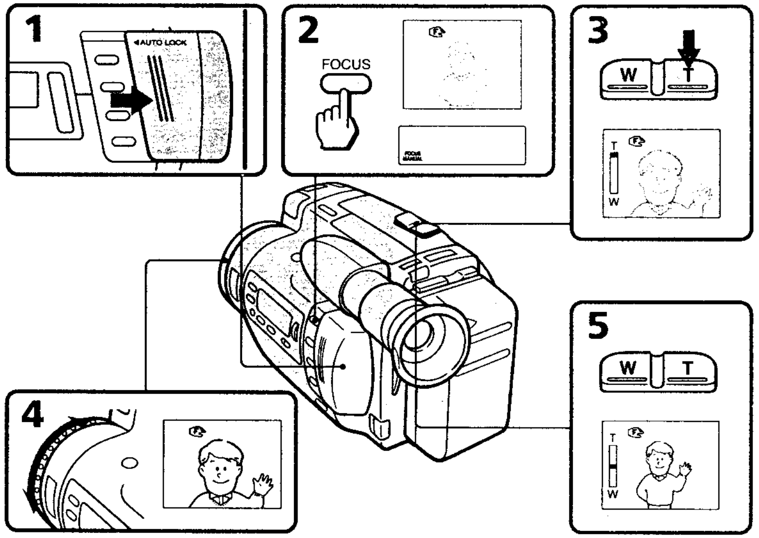
- Luz insuficiente **[a]**
- Motivos con poco contraste - paredes, cielo, etc. **[b]**
- Demasiado brillo detrás del motivo **[c]**
- Rayas horizontales **[d]**
- Motivos situados detrás de un vidrio empañado
- Motivos situados detrás de redes, etc.
- Motivo brillante o que refleja luz
- Cuando videofilme un motivo estacionario utilizando un trípode

Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.
(1) Open the AUTO LOCK cover until it clicks.
(2) Press FOCUS. The focus indicator appears in the viewfinder and display window. **(3)** Keep the power zoom button to the T side until the zooming stops. **(4)** Turn the focus ring to adjust the focus. **(5)** Set the desired shot length.

Enfoque manual

Cuando ajuste manualmente el enfoque, ajuste primero a la posición de telefoto antes de filmar y después ajuste la distancia de videofilmación.
(1) Abra la cubierta AUTO LOCK hasta que chasquee. **(2)** Presione FOCUS. En el visor y en la ventanilla visualizadora aparecerá el indicador de enfoque. **(3)** Mantenga la tecla del zoom motorizado en el lado T hasta que el zoom se detenga. **(4)** Gire el anillo de enfoque hasta enfocar nítidamente. **(5)** Ajuste la distancia de videofilmación deseada.



To Reactivate Auto focusing

Press FOCUS again, or close the AUTO LOCK cover. The focus indicator in the viewfinder and display window disappears.

Shooting in relatively dark places
Shoot at wide angles after focusing in telephoto.

Note on the focus ring
The focus ring does not have a stop position.

Para reactivar el enfoque automático

Vuelva a presionar FOCUS o cierre la cubierta AUTO LOCK. El indicador de enfoque desaparecerá del visor y la ventanilla visualizadora.

Videofilmación en lugares relativamente oscuros
Videofilme en gran angular después de haber enfocado en telefoto.

Nota sobre el anillo de enfoque
El anillo de enfoque es de giro sin fin.

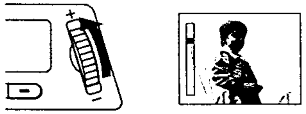
Adjusting the Exposure

Ajuste de la exposición

When to Adjust the Exposure

Adjust the exposure manually under the following cases.

[a]



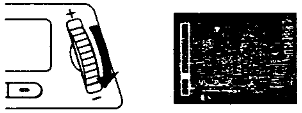
[a] Turn the exposure dial to + when:
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b] Turn the exposure dial to – when:
- Bright subject and dark background
- To record the darkness faithfully

Cuándo ajustar la exposicón

En los casos siguientes, ajuste manualmente la exposición.

[b]



[a] Gire el dial de exposición hacia + cuando:
- El fondo es demasiado brillante (contraluz)
- La iluminaciónes insuficiente: la mayor parte de la imagen es oscura.

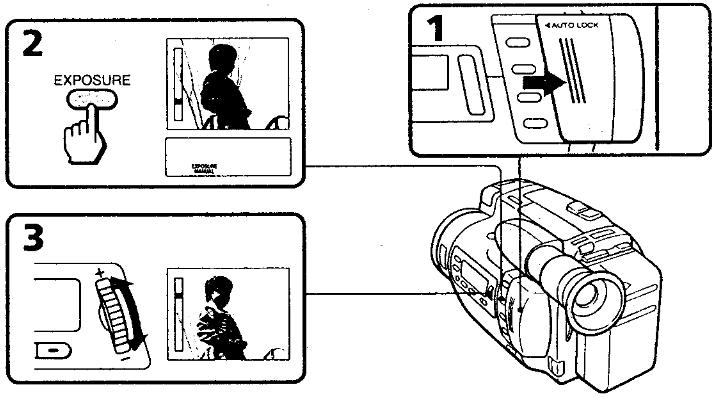
[b] Gire el dial de exposición hacia – cuando:
- El motivo es brillante y el fondo oscuro
- Desea videofilmar bien en la oscuridad

Adjusting the Exposure

(1) Open the AUTO LOCK cover until it clicks. **(2)** Press EXPOSURE. The exposure indicator appears in the viewfinder and display window. The exposure is locked at the actual brightness. **(3)** Turn the exposure dial to adjust exposure. The exposure is locked at the adjusted brightness.

Ajuste manual de la exposición

(1) Abra la cubierta AUTO LOCK hasta que chasquee. **(2)** Presione EXPOSURE. En el visor y en la vetanilla visualizadora aparecerá el indicador de exposición, y la exposición se mantendrá ajustada al brillo actual. **(3)** Ajuste la exposición girando el dial de la misma. La exposición se mantendrá ajustada al brillo establecido.



To Return to Automatic Exposure Mode

Press EXPOSURE again, or close the AUTO LOCK cover.

Shooting with the sun behind you

If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark

We recommend you to use the video light (not supplied). To get the best colour, you must maintain a sufficient light level.

Para volver al modo de exposición automática

Vuelva a presionar EXPOSURE, o cierre la cubierta AUTO LOCK.

Videofilme con el sol a su espalda

Si videofilma una escena con la fuente de iluminación detrás del motivo o con las siguientes condiciones, éste se grabará demasiado oscuro.
- El motivo está en interiores y existe una ventana detrás de él.
- La escena incluye fuentes de luz brillantes.
- Una persona vestida de blanco o brillante frente a un fondo blanco. En este caso, el rostro se grabará demasiado oscuro.

Videofilmación en un lugar oscuro

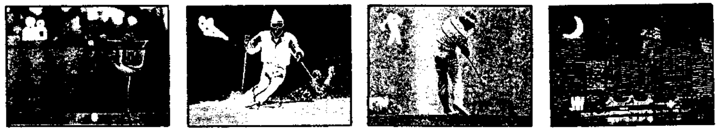
Se recomienda utilizar una lámpara de vídeo (no suministrada). Para conseguir el mejor color, deberá mantener el nivel de iluminación suficiente.

Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a portrait effect (the subject is in focus and the background is out of focus), capture high-speed action, or record night views.

Selecting the Best Mode

Select one of four modes, referring to the following.



Portrait mode
- A still subject such as a person or a flower
- Zooming in on a subject in the telephoto mode
- A subject behind an obstacle such as a net

Sports mode
- Outdoor sports scene such as football, tennis, golf or skiing
- A landscape in a moving car

High-speed shutter mode
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in a clear, sharp picture

Twilight mode
Recording night views, neon signs or fireworks

Utilización de la función PROGRAM AE

Usted podrá seleccionar entre cuatro modos de PROGRAM AE (exposición automática programada), de acuerdo con la condición de videofilmación. Con la función de PROGRAM AE, podrá obtener un efecto de "retrato" (el motivo enfocado y el fondo desenfocado), o captar una acción a gran velocidad, o grabar vistas nocturnas.

Selección del modo apropiado

Seleccione uno de los cuatro modos refiriéndose a los siguientes ejemplos.

Modo de retrato
- Un motivo fijo como una persona o una flor
- Aumentar un motivo en el modo de telefoto
- Un motivo detrás de un obstáculo como una red

Modo de deportes
- Videofilmación de escenas de deportes de exteriores como fútbol, tenis, golf o esquí
- Videofilmación de paisajes desde un automóvil en marcha

Modo de obturación a alta velocidad
- Un swing de golf o un partido de tenis en un día claro con la pelota de tenis visualizada claramente
- Reproducir ciertas escenas con movimientos a gran velocidad en una imagen clara y nítida

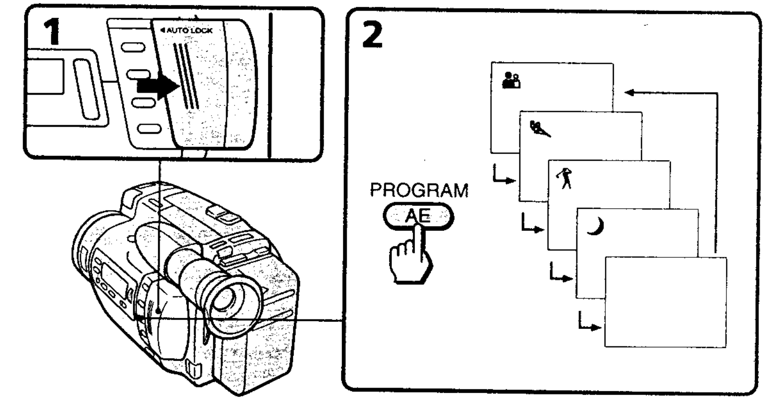
Modo de crepúsculo
Videofilmación de vistas nocturnas, letreros de neón o fuegos artificiales

Using the PROGRAM AE Function

(1) Open the AUTO LOCK cover. **(2)** Press PROGRAM AE. The indicator of the selected PROGRAM AE mode appears in the viewfinder and the display window.

Empleo de la función PROGRAM AE

(1) Abra la cubierta AUTO LOCK. **(2)** Presione PROGRAM AE. En el visor y en la ventanilla visualizadora aparecerá el indicador del modo PROGRAM AE seleccionado.



Note on shutter speed
The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode-between 1/50 to 1/2000
Sports mode-between 1/50 to 1/500
High-speed shutter mode-1/4000
Twilight mode-1/50

Nota sobre la velocidad de obturación
La velocidad de obturación en cada modo PROGRAME AE es el siguiente:
Modo de retrato - entre 1/50 y 1/2000
Modo de deportes - entre 1/50 y 1/500
Modo de obturación a alta veloicdad - 1/4000
Modo de crepúsculo - 1/50

Adjusting the White Balance

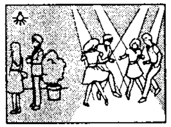
Ajuste del equilibrio del blanco

White balance is the adjustment to make white subjects look white and to obtain a more natural colour balance.

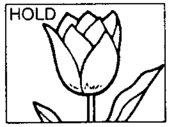
Selecting the Appropriate Mode

Select the appropriate white balance mode under the following conditions:

[a]



[b]



☼ **Indoor mode**
- Lighting condition changes quickly. **[a]**
- Too bright place such as photography studios
- Under sodium lamps or mercury lamps

HOLD Hold mode
Monochromatic subject or background **[b]**

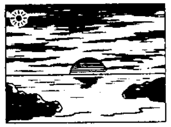
☀ **Outdoor mode**
- Under a colour matching fluorescent lamp
- Recording a sunset/sunrise, just after sunset, just before sunrise **[c]**, neon signs, or fireworks **[d]**

Con el ajuste del equilibrio del blanco, un motivo blanco se grabará como blanco y su videofilmación obtendrá un equilibrio de color más natural.

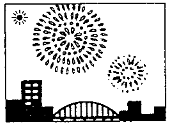
Selección del modo apropiado

Seleccione el modo de equilibrio del blanco apropiado en las condiciones siguientes.

[c]



[d]



☼ **Modo de interiores**
- Las condiciones de iluminación cambian rápidamente **[a]**
- Lugares con demasiado brillo, como en estudios fotográficos
- Bajo una lámpara de sodio o mercurio

Modo HOLD (bloqueo)
Motivos o fondo monocromático **[b]**

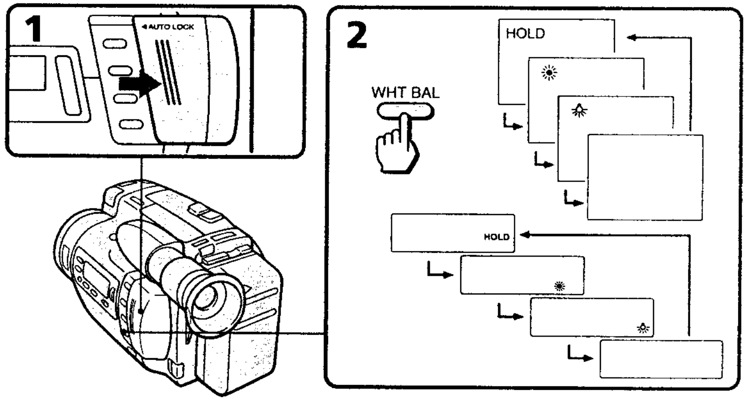
☀ **Modo de exteriores**
- Bajo una lámpara fluorescente con concordancia de color
- Videofilmación de la puesta/salida del sol, inmediatamente después de la puesta del sol inmediatamente antes de la salida del sol **[c]**, letreros de neón, o fuegos artificiales **[d]**

Setting White Balance Mode

(1) Open the AUTO LOCK cover until it clicks. **(2)** Press WHT BAL repeatedly so that the desired mode indicator appears in the viewfinder and display window.

Ajuste del equilibrio del blanco

(1) Abra la cubierta AUTO LOCK hasta que chasquee. **(2)** Presione repetidamente WHT BAL de forma que en el visor y en la ventanilla visualizadora aparecerá el indicador del modo deseado.



Locking the White Balance Setting (HOLD mode)

When you set the white balance to HOLD mode, the last automatic white balance setting will be locked and maintained even if lighting conditions change.
(1) Close AUTO LOCK cover. **(2)** Point the camcorder at a white and flat object such as a white wall or paper for about 15 seconds.
(3) Open AUTO LOCK cover. **(4)** Press WHT BAL repeatedly so that the HOLD indicator appears in the viewfinder and display window.

Note on the HOLD mode setting
When you detach the battery or change white balance mode, the setting you made for HOLD mode is canceled.

To Return to Automatic White Balance Mode

Press WHT BAL repeatedly until the white balance indicator disappears, or close AUTO LOCK cover.

Bloqueo del ajuste del equilibrio del blanco (modo HOLD)

Cuando ajuste el equilibrio del blanco al modo HOLD, el último ajuste automático del equilibrio del blanco se bloqueará y se mantendrá aunque cambie la condicion de iluminacion.
(1) Cierre la cubierta AUTO LOCK. **(2)** Apunte hacia un objeto plano y blanco, como una pared o un papel blanco durante unos 15 segundos.
(3) Abra la cubierta AUTO LOCK. **(4)** Presione repetidamente WHT BAL de forma que en el visor y el la ventanilla visualizadora aparecerá el indicador HOLD.

Nota sobre el ajuste del modo HOLD
Cuando quite la batería o cambie el modo de equilibrio del blanco, el ajuste que haya realizado para el modo HOLD se cancelará.

Para volver al modo de equilibrio del blanco automático

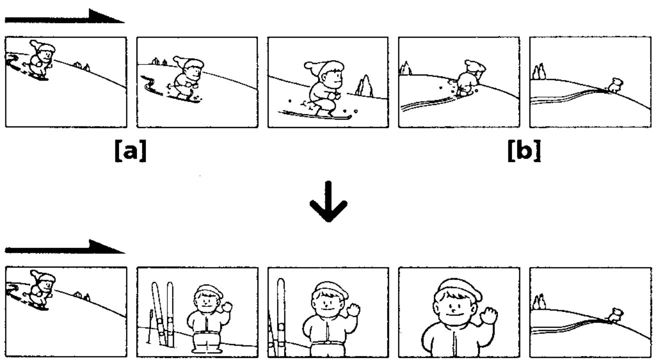
Presione repetidamente WHT BAL de forma que desaparezca el indicador del equilibrio del blanco, o cierre la cubierta AUTO LOCK.

Inserting a Scene in the Middle of a Recorded Tape

Inserción de una escena en medio de una cinta grabada

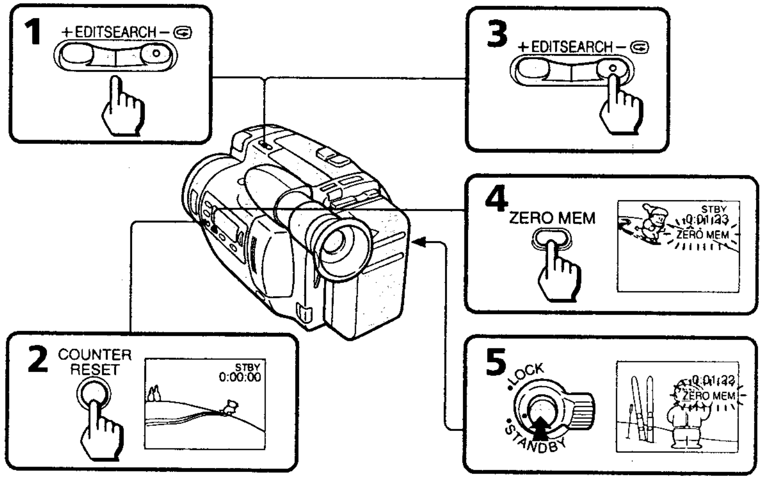
You can insert a scene in the middle of a recorded tape by setting the starting point and ending point. A previously recorded portion will be erased.

Usted podrá insertar una escena en medio de una cinta grabada ajustando el punto de comienzo y el de finalización. La grabación previamente realizada se borrará.



(1) While looking in the viewfinder in Standby mode, keep pressing the + or – side of EDITSEARCH and release the button where you want to end the insertion **[b]**. **(2)** Press COUNTER RESET to set the counter to zero.
(3) While looking in the viewfinder, keep pressing the - side of EDITSEARCH and release the button where you want to start the insertion **[a]**. **(4)** Press ZERO MEM to stop recording of insert at the counter's zero point. **(5)** Press START/STOP. Insert recording begins. The insert recording stops automatically at the counter zero point.

(1) Observando a través del visor en el modo de espera, mantenga presionado el lado + o – de EDITSEARCH y suéltelo cuando desee finalizar la inserción **[b]**. **(2)** Presione COUNTER RESET para ajustar el contador a cero. **(3)** Observando a través del visor, mantenga presionado el lado - de EDITSEARCH y suéltelo en el punto en el que desee iniciar la inserción **[a]**. **(4)** Presione ZERO MEM para que la grabación con inserción finalice en el punto cero del contador. **(5)** Presione START/STOP. Se iniciará la grabación con inserción. La grabación con inserción finalizará automáticamente en el punto cero del contador.



Canceling the ZERO MEM

Press ZERO MEM again. The ZERO MEM indicator disappears.

Note on the recorded picture

The picture may be distorted at the ending point when played back.

Para cancelar la memoria del punto cero

Presione nuevamente ZERO MEM. El indicador ZERO MEM desaparecerá.

Nota sobre la imagen grabada

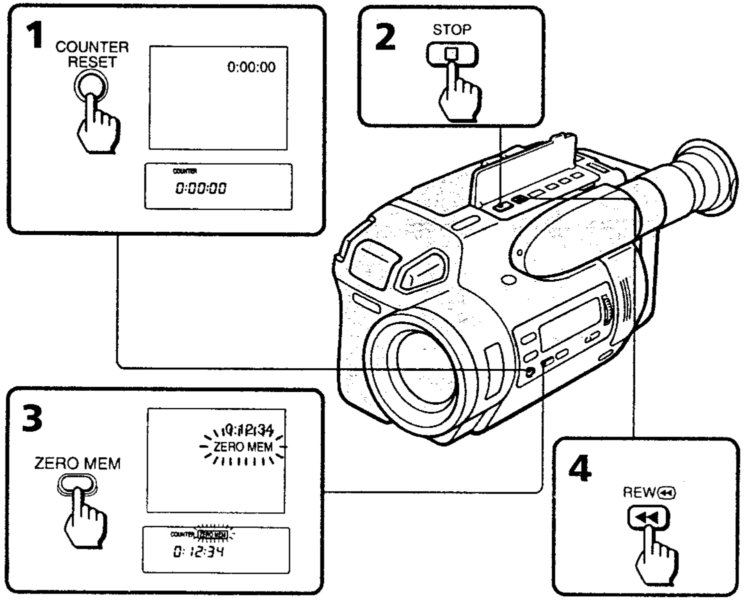
Es posible que las imágenes se distorsionen en el punto de finalización cuando las reproduzca.

Returning to a Pre-registered Position

You can easily go back to the desired point on a tape after playback.
(1) During playback, press COUNTER RESET at the point you later want to locate. The counter shows "0:00:00" in the viewfinder and the display window.
(2) Press □ when you want to stop playback.
(3) Press ZERO MEM to stop rewinding at the counter's zero point. The "ZERO MEM" indicator flashes in the viewfinder and the display window.
(4) Press ◀◀. The tape stops automatically when the counter reaches approximately zero.

Vuelta al punto previamente registrado

Usted podrá volver fácilmente al punto deseado después de la reproducción.
(1) Durante la reproducción, presione COUNTER RESET en el punto el que desee localizar más tarde. El contador mostrará "0:00:00" en el visor y en la ventanilla visualizadora. **(2)** Presione □ cuando desee parar la reproducción. **(3)** Presione ZERO MEM para cesar el rebobinado en el punto cero del contador. En el visor y en la ventanilla visualizadora parpadeará el indicador "ZERO MEM". **(4)** Presione ◀◀. La cinta se parará automáticamente cuando el contador llegue aproximadamente a cero. .



Notes on the tape counter
- Something must be recorded on the tape in order for the tape counter to function. Tape counter does not work on a blank tape.
- There may be a discrepancy of several seconds from the actual time.

Nota sobre el contador de la cinta
- Para que funcione el contador, deberá tener algo grabado en la cinta. El contador no trabajará en una cinta en blanco.
- Es posible que exista una diferencia de varios segundos entre el contador y el tiempo real.

Notes on ZERO MEM
- When you press ZERO MEM, the counter's zero point is memorized.
- This function is canceled automatically once the tape is rewound or sent forward to the point you pre-registered.
- Be sure to press ZERO MEM when the tape is stopping. It does not function during recording or playing back.

Using this Function in Reverse

You can return to a desired position after rewinding with this function. Press COUNTER RESET at the point you want to return to later. Press ◀◀. Press □ when you want to stop rewinding. Press ZERO MEM. Press ▶▶. The tape automatically stops near the zero point you first set.

Notas sobre ZERO MEM
- Cuando presione ZERO MEM, se memorizará el punto cero del contador.
- Esta función se cancelará automáticamente cuando la cinta se haya rebobinado o haya avanzado hasta el punto previamente registrado.
- Asegúrese de presionar ZERO MEM cuando la cinta esté parada. Esta función no se activará durante la grabación ni la reproducción.

Empleo de la función ZERO MEM en el rebobinado

Usted podrá volver a un punto deseado después de haber rebobinado la cinta con esta función. Presione COUNTER RESET en el punto al que desee volver más tarde. Presione ◀◀. Presione □ cuando desee parar el rebobinado. Presione ZERO MEM. Presione ▶▶. La cinta se parará automáticamente cerca del punto cero establecido primero.

Locating the Marking Position

You can locate the beginning of a desired programmes easily by marking an index signal during recording or playback and searching for it later.

Marking and Erasing an Index Signal

You can mark an index signal during recording or playback. You can also mark it with the Remote Commander.

Localización del punto marcado

Usted podrá localizar fácilmente el comienzo del programa deseado, marcando una señal de índice durante la grabación o la reproducción y localizándola más tarde.

Marcación y borrado de una señal de índice

Usted podrá marcar una señal de índice durante la grabación o la reproducción. También podrá utilizarse el telemando para marcar señales de índice.

See the next page for further information.

Para más información, consulte la página siguiente.

Locating the Marking Position

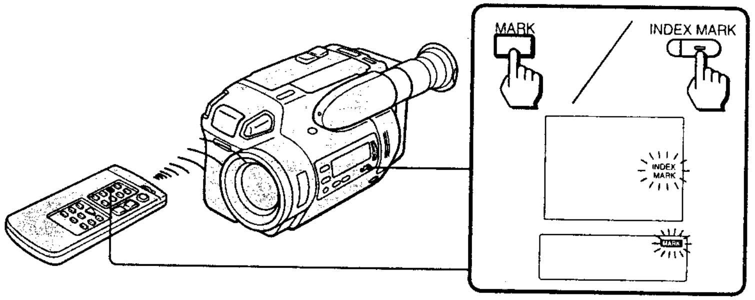
Localización del punto marcado

Marking an Index Signal at the Beginning of Recording or Playback

Press INDEX MARK on the camcorder or the Remote Commander in recording standby or playback pause mode. The INDEX MARK indicator appears in the viewfinder with the MARK indicator flashing and the MARK indicator flashes in the display window. When recording or playback starts, the MARK indicator stops flashing. This shows that the index signal is being marked. The INDEX MARK indicator will then disappear.

Marcación de una señal de índice en el comienzo de la grabación o la reproducción

Presione INDEX MARK en la videocámara o el telemando en el modo de grabación en espera o reproducción en espera. En el visor a parecerá el indicador INDEX MARK. El indicador MARK parpadeará en el visor y en la ventanilla visualizadora y dejará de parpadear cuando comience la grabación o la reproducción. La señal de índice se marcará durante el parpadeo del indicador. Después el indicador INDEX MARK desaparecerá.



Marking an Index Signal during Recording or Playback

Press INDEX MARK on the camcorder or the Commander at the point you want to locate later.

Notes
- Make sure you mark index signals at more than two-minute intervals. Otherwise, you may not be able to search for them correctly.
- If you stop recording while the index signal is being marked (the INDEX MARK indicator lights in the viewfinder), the search may not be completed correctly.
- If you mark an index signal on the tape with the data code recorded, the data code will be erased at the point on which the index signal is marked. When playing back this tape, the camcorder keeps displaying the data code immediately before the erased one. If the data code does not exist for more than 30 seconds, the data code displays bars (----).

Marcación de señales de índice durante la grabación o la reproducción

Presione INDEX MARK en la videocámara o el telemando en el punto que desee localizar más tarde.

Notas
- Asegúrese de marcar señales de índice con el intervalo de dos minutos por lo menos. De lo contrario, es posible que no pueda localizarlas correctamente.
- Si para la grabación mientras esté marcándose una señal de índice (el indicador INDEX MARK aparece en el visor), es posible que la búsqueda no se realice correctamente.
- Si marca una señal de índice en la cinta en la que esté grabado el código de datos, éste se borrará en el punto en el que se marque la señal de índice. Cuando reproduzca esta cinta, permanecerá visualizado el código de datos inmediatamente anterior al borrado. Si no hay código de datos durante más de 30 segundos, se visualizarán las barras (----).

Note on the unusable tape for an index signal
You cannot mark an index signal on a tape with the red mark on the cassette exposed (p.57).

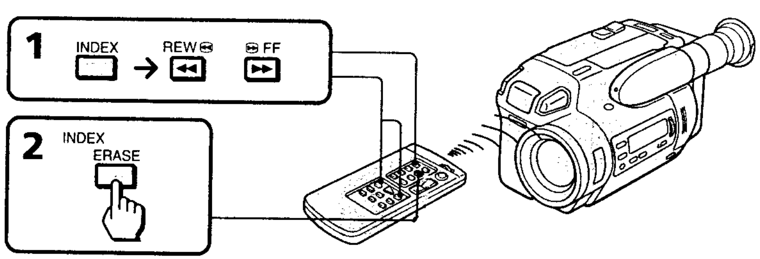
Nota sobre la cinta cuando marque señales de índice
Usted no podrá marcar señales de índice cuando en el cassette eatá al descubierto la marca roja (p.57).

Erasing an Index Signal

(1) Locate the index signal to be erased the index scan or index search function. (p.51) **(2)** Press INDEX ERASE on the Remote Commander within 2 to 10 seconds while the desired programme plays back. After the index signal is erased, the camcorder returns to index scan or index search mode, whichever was used in step 1.

Borrado de señales de índice

(1) Localice la señal de índice que desee borrar con la función de exploración o la búsqueda con señales de índice (p.51). **(2)** Presione INDEX ERASE del telemando durante 2 a 10 segundos mientras esté reproduciendo el programa deseado. Después de que la señal de índice se haya borrado, la videocámara volverá al modo de exploración o búsqueda con señales de índice, el que haya activado en el paso 1.



Notes on erasing
- Press ERASE more than 2 seconds after the playback of the desired programme begins.
- You cannot erase the index signal on a tape on which the red mark on the cassette is exposed.
- While the index signal is being erased, the sound cannot be heard and a black band appears at the bottom of the picture. This will not affect the recorded sound or picture.
- The camcorder can detect index signals marked with VCR, but cannot erase them. VCR with a index function can detect index signals marked with this camcorder but cannot erase them.
- An index signal may be erased when making PCM afier recording in the portion where the index signel is marked.

Notas sobre el borrado
- Presione ERASE durante más de 2 segundos después de que haya comenzado la reproducción del programa deseado.
- Usted no podrá borrar señales de índice cuando el cassette tenga la marca roja al descubierto.
- Mientras esté borrándose una señal de índice, el sonido no podrá oírse y aparecerá una franja negra en la parte inferior de la imagen. Esto no afectará el sonido o la imagen grabada.
- La videocámara podrá detectar señales de índice marcadas en una videograbadora, pero no podrá borrarlas. Una videograbadora provista de función de índice podrá detectar señales de índice marcadas en esta videocámara, pero no podrá borrarlas.
- Cuando una parte previamente grabada con señales de índice se convierta en PCM, es pasible que las señales de índece se borren.

See the next page for further information.

Para más información, consulte la página siguiente.

Locating the Marking Position

Localización del punto marcado

Note on RC time code and data code
When an index signal is erased, the RC time code and data code on the same portion of the tape is also erased. Bars (----) appear in place of the RC time code when the portion is played back. To use that tape for editing using an editing controller, rewrite the RC time code (p.53).

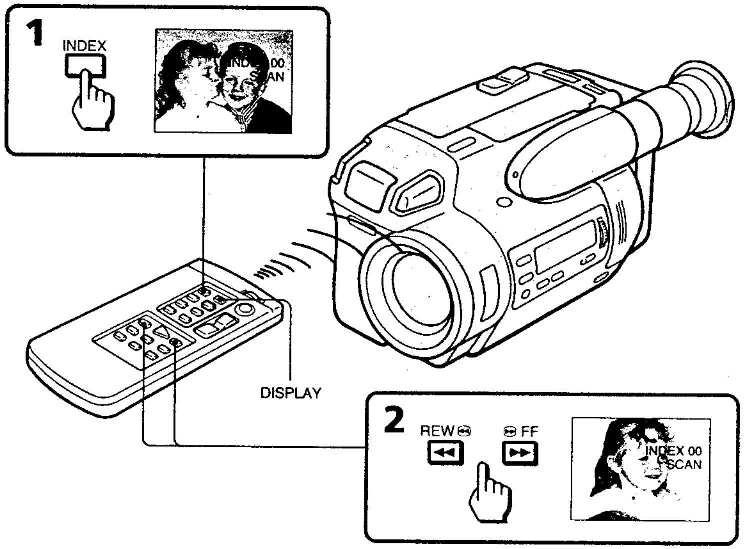
Nota sobre los códigos de tiempo RC y de datos
Cuando borre una señal de índice, se borrarán también los códigos de tiempo RC y de datos en el mismo punto. Cuando reproduzca este punto, en el lugar del código de tiempo RC aparecerán las barras (----). Para utilizar esta cinta para la edición empleando un controlador de edición, reescriba el código de tiempo RC (p.53).

Scanning the Beginning of Each Marking Position – Index Scan

Use the Remote Commander. To view the picture on a TV, press DISPLAY.
(1) Press INDEX on the Remote Commander during normal playback or playback pause mode. **(2)** Press ◀◀ or ▶▶. The tape rewinds or advances rapidly and plays back for approximately 10 seconds from the point on which the index signal was marked. If you want to continue playback, press ▷. When you do not press any button, the tape is automatically scanned to the next programme.

Exploración del punto marcado – Exploración con señales de índice

Utilice el telemando. Para ver las imágenes en el televisor, presione DISPLAY.
(1) Presione INDEX del telemando durante la reproducción normal o la reproducción en pausa. **(2)** Presione ◀◀ o ▶▶. La cinta se rebobinará o avanzará rápidamente y se reproducirá durante unos 10 segundos a partir del punto donde se haya marcado una señal de índice. Si desea continuar la reproducción, presione ▷. De lo contrario, la videocámara explorará automáticamente la siguiente señal de índice.



Scanning the Beginning of Each Programme in Sequence

(1) Press INDEX on the Remote Commander during stop mode. **(2)** Press ◀◀ or ▶▶. The tape rewinds or advances rapidly and plays back for approximately 10 seconds from the point on which an index signal was marked. **(3)** Press ▷ when the desired programme starts playback.

To cancel index scan mode
Press ▷. Normal playback resumes.

Exploración del comienzo de cada programa en secuencia

(1) Presione INDEX del telemando durante el modo de parada. **(2)** Presione ◀◀ o ▶▶. La cinta se rebobinará o avanzará rapidamente y se reproducira durante unos 10 segundos a partir del punto donde se haya marcado una señal de índice. **(3)** Presione ▷ cuando comience a reproducir el programa deseado.

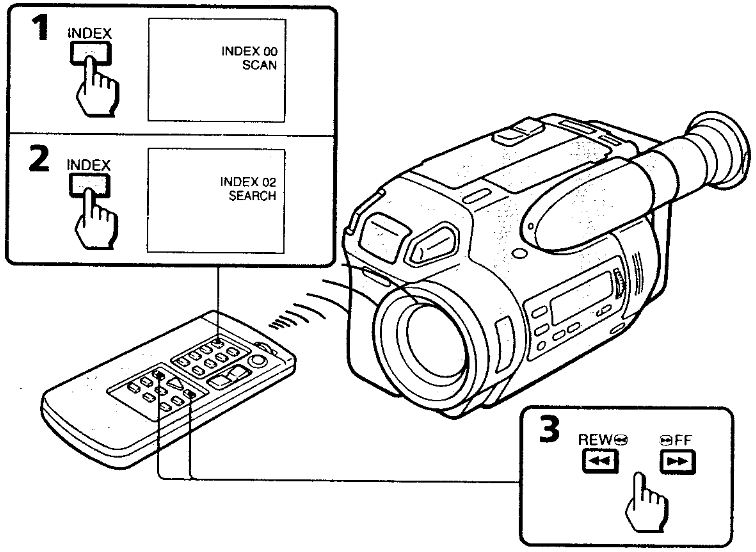
Para cancelar el modo de exploración con señales de índice
Presione ▷. Se reanudará la reproducción normal.

Locating the Desired Marking Position – Index Search

(1) Press INDEX on the Remote Commander during stop or playback mode. **(2)** Press INDEX repeatedly until the index number of the desired programme is displayed in the viewfinder. **(3)** Press ◀◀ or ▶▶. Playback starts from the beginning of the desired programme.

Localización de un punto marcado – Búsqueda con señales de índice

(1) Presione INDEX del telemando durante el modo de parada o reproducción. **(2)** Presiónela repetidamente hasta que en el visor aparezca el número de índice del programa deseado. **(3)** Presione ◀◀ o ▶▶. La reproducción se iniciará desde el comienzo del programa deseado.



To Stop index search mode
Press ▷. Normal playback resumes.

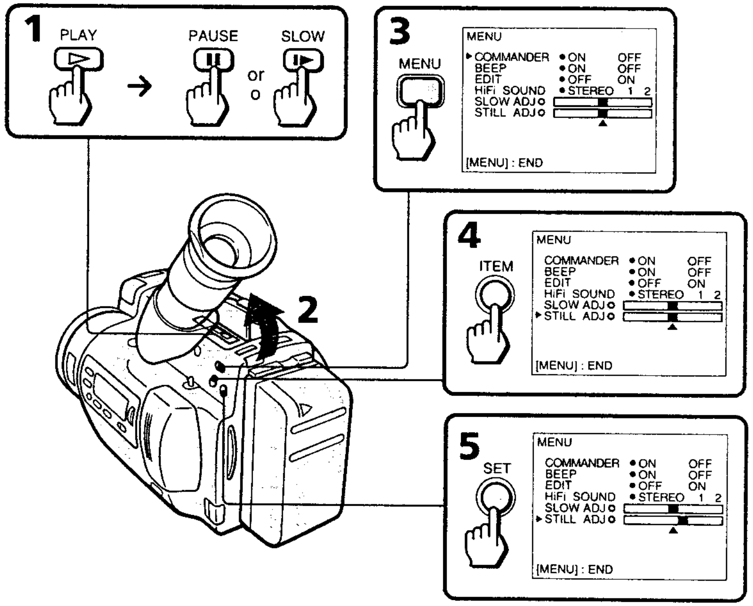
Para cesar el modo de búsqueda con señales de índice
Presione ▷. Se reanudará la reproducción normal.

Adjusting a Still or Slow Picture

You can adjust the playback picture when noise bands appear at the top or bottom of the picture during slow mode or when vertical shaking occurs during still mode.
(1) Play back the recorded tape on the camcorder until you locate the point where you want to play in still or slow mode and press II or I▶. **(2)** Lift up the viewfinder. **(3)** Press MENU to display the menu in the viewfinder. **(4)** Press ITEM to move the cursor ▷ to the item you want to adjust (SLOW ADJ or STILL ADJ). **(5)** Keep pressing SET until you get the best quality.

Ajuste de la imagen fija o a cámara lenta

Usted podrá ajustar la imagen reproducida cuando aparezcan bandas de ruido en la parte superior o inferior de la misma durante la reproduccion a cámara lenta o cuando produzcan sacudidas verticales durante la imagen fija.
(1) Reproduzca la cinta grabada en la videocámara hasta que localice el punto en el que desee reproducir en el modo de imagen fija o a cámara lenta, y presione II o I▶. **(2)** Levante el visor. **(3)** Presione MENU para visualizar el menú en el visor. **(4)** Presione ITEM para mover el cursor ▷ hasta el ítem que desee ajustar (SLOW ADJ o STILL ADJ). **(5)** Mantenga presionada SET hasta mejorar la imagen.

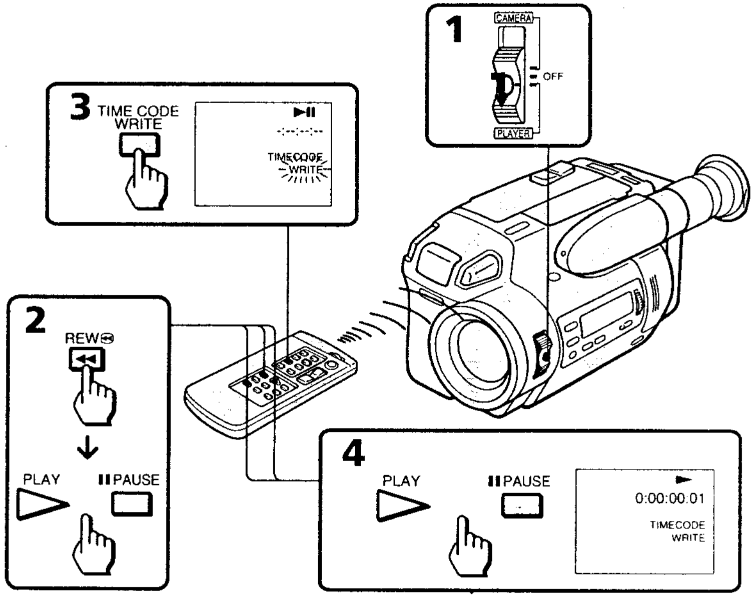

1
PLAY
PAUSE
SLOW
or
o
2
3
MENU
MENU
▸COMMANDER ●ON OFF
BEEP ●ON OFF
EDIT ●OFF ON
HiFi SOUND ●STEREO 1 2
SLOW ADJ ○
STILL ADJ ○
[MENU] : END
4
ITEM
MENU
COMMANDER ●ON OFF
BEEP ●ON OFF
EDIT ●OFF ON
HiFi SOUND ●STEREO 1 2
SLOW ADJ ○
▸STILL ADJ ○
[MENU] : END
5
SET
MENU
COMMANDER ●ON OFF
BEEP ●ON OFF
EDIT ●OFF ON
HiFi SOUND ●STEREO 1 2
SLOW ADJ ○
▸STILL ADJ ○
[MENU] : END

Writing the RC Time Code on a Recorded Tape

You can write the RC time code on a recorded tape. Use the Remote Commander.
(1) While pressing the small green button on the POWER switch, slide it to PLAYER. **(2)** Rewind the tape to the beginning and set the camcorder to playback pause mode. **(3)** Press TIME CODE WRITE on the Remote Commander. The TIME CODE WRITE indicator appears in the viewfinder with WRITE flashing. **(4)** Press ▷ or II to start playback. The WRITE indicator stops flashing and the RC time code writing starts from 0:00:00:00.

Escritura del código de tiempo RC en una cinta grabada

Usted podrá escribir el código de tiempo RC en una cinta grabada. Utilice el telemando.
(1) Manteniendo presionado el pequeño botón verde en el selector POWER, deslícelo hasta PLAYER. **(2)** Rebobine la cinta hasta su comienzo y ponga la videocámara en el modo de reproducción en pausa. **(3)** Presione TIME CODE WRITE del telemando. En el visor aparecerá el indicador TIME CODE WRITE y parpadeará WRITE. **(4)** Presione ▷ o II para iniciar la reproducción. El indicador WRITE dejará de parpadear y el código de tiempo RC se escribirá desde 0:00:00:00.


1
CAMERA
OFF
PLAYER
3
TIME CODE WRITE
▶II
-:--:--:--
TIMECODE
WRITE
2
REW
PLAY
II PAUSE
4
PLAY
II PAUSE
▶
0:00:00:01
TIMECODE
WRITE

To Stop Writing the RC Time Code

Press □ (or any tape transport button).

Para cesar la escritura del código de tiempo RC

Presione □ (o cualquier tecla de transporte de la cinta).

See the next page for further information.

Para más información, consulte la página siguiente.

Writing the RC Time Code on a Recorded Tape

To Write the RC Time Code from the End of the RC Time Code Recorded Portion

Rewind the tape to the portion on which the RC time code has been written and set the camcorder to playback pause mode. Then follow steps 3 and 4 above. The RC time code is written continuously.

Canceling RC time code writing

The RC time code writing stops when:

- you press TIME CODE WRITE again before starting playback
- you press INDEX before starting playback
- you change from playback mode to another mode

Note on writing the RC time code

When you are writing the RC time code from the middle of a tape without the time code written, writing starts several frames before the current picture.

Escritura del código de tiempo RC en una cinta grabada

Para escribir el código de tiempo RC a partir del punto final de dicho código grabado

Rebobine la cinta hasta la parte en la que se haya escrito el código de tiempo RC y ponga la videocámara en el modo de reproducción en pausa. Después, realice los pasos 3 y 4 anteriores. El código de tiempo RC se escribirá continuamente.

Cancelación de la escritura del código de tiempo RC

La escritura del código de tiempo RC se parará cuando:

- presione nuevamente TIME CODE WRITE antes de iniciar la reproducción.
- presione INDEX antes de iniciar la reproducción.
- cambie del modo de reproducción a otro modo.

Nota sobre la escritura del código de tiempo RC

Si escribe el código de tiempo RC desde el medio de una cinta sin dicho código, la escritura se iniciará a partir de algunos cuadros antes de la imagen actual.

Editing onto Another Tape

You can create your own video programme by editing with any other 8 mm, Hi8, VHS, S-VHS, VHSC, S-VHSC, Betamax or ED Betamax VCR that has audio/video inputs.

Before Editing

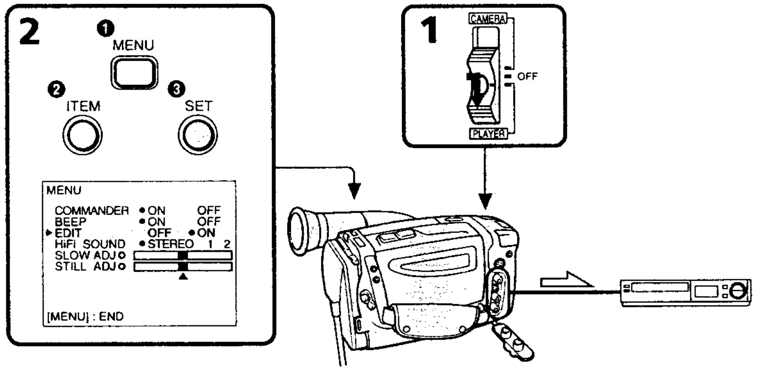
Connect the camcorder to the VCR using the A/V connecting cable (supplied). (p.23).
Set the input selector on the VCR to LINE, if available. Note that the data code of that tape is erased.
(1) Set the POWER switch to PLAYER.
(2) Set EDIT to ON in the menu system (p.31).

Edición en otra cinta

Usted podrá crear su propio programa de vídeo editando con una videograbadora de formato de 8mm, 8mm de Hi8, VHS, S VHS, VHSC, S-VHSC, Betamax o ED Betamax que disponga de entradas de video/audio.

Antes de la edición

Conecte la videocámara a la videograbadora empleando el cable conector de audio/vídeo (suministrado) (p.23).
Ponga el selector de entrada de la videograbadora en LINE, si dispone de él. Tenga en cuenta que el código de datos de la cinta se borrará.
(1) Ponga el selector POWER en PLAYER.
(2) Ajuste el modo EDIT a ON en el sistema del menú (p.31).



⇨ : Signal flow/Flujo de la señal

If your VCR is a monaural type, connect only the white plug for audio on both the camcorder and VCR.

Si la videograbadora es tipo monoaural, conecte sólo la clavija blanca para audio en la videocámara y la videograbadora.

Editing onto Another Tape

Edición en otra cinta

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR. And insert your recorded tape into the camcorder. **(2)** Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then set the camcorder in the playback pause mode. **(3)** On the VCR, locate the recording start point and set the VCR in the recording pause mode. **(4)** Press **II** on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing Momentarily

Press **II** on the VCR.

To Stop Editing

Press ☐ on both the camcorder and the VCR.

Use of the EDITSEARCH button

You can play back the tape in normal/reverse direction by keep pressing EDITSEARCH during playback pause mode. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the EDIT mode

When you set EDIT to ON in the menu system, you can keep picture deterioration resulting fron editing to a minimum. However, when you edit or copy to anothre VCR, avoid using the edited tape for multiple generations of editing. After editing, be sure to set EDIT to OFF.

Note on the DISPLAY function

If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Edición

(1) Inserte un videocassette en blanco (o una cinta en la que desee realizar la regrabación) en la videograbadora y la cinta grabada en la videocámara. **(2)** Reproduzca la cinta grabada en la videocámara hasta localizar el punto en el que desee comenzar la edición, y después ponga la videocámara en el modo de reproducción en pausa. **(3)** Localice el punto de comienzo de la grabación en la videograbadora, y póngala en el modo de grabación en pausa. **(4)** Presione simultáneamente **II** de la videocámara y la videograbadora para comenzar la edición.

Para editar más escenas

Repita los pasos 2 a 4.

Para cesar momentáneamente la edición

Presione **II** de la videograbadora.

Para cesar la edición

Presione ☐ STOP de la videocámara y de la videograbadora.

Empleo de la tecla EDITSEARCH

Usted podrá reproducir una cinta en sentido progresivo ó regresivo, manteniendo presionada EDITSEARCH durante la reproducción en pausa. Si la presiona en forma intermitente, podrá reproducir sucesivamente las imágenes fijas a ciertos intervalos.

Nota sobre el modo EDIT

Si ajusta EDIT a ON en el sistema del menú, podrá mantener al mínimo el deterioro resultante de la edición. Sin embargo, cuando edite o duplique en una videograbadora, evite emplear la cinta editada para la generación de múltiples ediciones. Después de la edición, asegúrese de ajustar EDIT a OFF.

Nota sobre la función DISPLAY

Si ha visualizado los indicadores de la pantalla del visor en el televisor, borre los indicadores presionando DISPLAY del telemando de forma que no se superpogan sobre la cinta editada.

Additional Information

Usable Cassettes and Recording/Playback Modes

Información adicional

Videocassettes utilizables y modos de grabación/reproducción

Selecting Cassette Types

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures. .
You can use Hi8 video and standard 8 mm cassettes. When you want to record in the Hi8 system, use only Hi8 video cassettes. You cannot record on standard 8 mm cassettes in the Hi8 system.
If you are going to play back the tape using a standard 8 mm video recorder/player, you should record the tape in the standard 8 mm system.
If you want to use a Hi8 cassette with the standard 8 mm recording system, set the Hi8 mode to OFF in the menu system befor recording (p.31).

To play back in	Record using cassette type	Set Hi8 setting to
Hi8	Hi8	AUTO
Standard 8	Hi8	OFF
	8	AUTO (or OFF)

Selección del tipo de videocassette

El sistema Hi8 (8 mm de alta fidelidad) se desarrolló a partir del sistema de 8 mm estándar ofreciendo mayor calidad en la imagen.
Con esta videocámara podrán utilizarse los videocassettes Hi8 y los de 8 mm estándar.
Cuando desee grabar en el sistema Hi8, deberá utilizar solamente videocassettes Hi8. Un videocassette de 8 mm estándar no podrá grabarse en el sistema Hi8.
Cuando vaya a reproducir la cinta en una videograbadora de 8 mm estándar, grábela en el sistema de 8 mm estándar.
Si desea utilizar un videocassette Hi8 con el sistema de grabación de 8mm estándar, ajuste el modo Hi8 a OFF en el sistema del menú antes de la grabación (p.31).

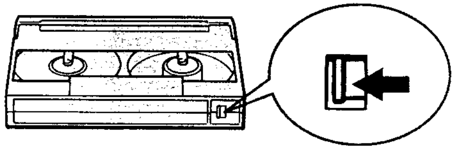
Para reproducir en el sistma	Grabado empleando un videocassette de tipo	Ponga el ajuste Hi8 a
Hi8	Hi8	AUTO
8 mm estándar	Hi8	OFF
	8	AUTO (u OFF)

To Prevent Accidental Erasure

Slide the tab on the cassette to expose the red mark.

Para prevenir el borrado accidental

Deslice la lengüeta del videocassette de forma que la marca roja quede al descubierto.



If you try to record with the red mark exposed, the ⊡ and ⏏ indicators flash in the viewfinder, and you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.

Si intenta grabar con la marca roja al descubierto, en el visor parpadearán los indicadores ⊡ y ⏏, y no podrá grabar. Para volver a grabar en esta cinta, deslice la lengüeta de forma que se cubra la marca roja.

Tips for Using the Battery Pack

Note on Charging

A Brand-new Battery
A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the ▭ indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn up the STANDBY switch, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor or the DC-S10 car battery charger, you can use the discharging function.
- **Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.**

After Long Storage
Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Note on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Consejos para utilizar la batería

Nota sobre la carga

Baterías nuevas
Una batería nueva no estará cargada. Antes de utilizarla, cárguela conpletamente.

Antes de cargar baterías usadas

- Asegúrese de utilizar completamente la batería antes de cargarla.
- Si finaliza la filmación antes de que en el visor aparezca el indicador ▭, extraiga el videocassette, deslice el selector POWER hasta CAMERA, gire STANDBY hacia arriba y deje la videocámara hasta que el indicador de estado de la batería parpadee rápidamente.
- Cuando utilice el adaptador de CA AC-S10 o el cargador de batería del automóvil DC-S10, podrá utilizar la función de descarga.
- **Si carga una batería sin descargar hará que la capacidad de la misma disminuya. La capacidad de la batería podrá recuperarse si vuelve a descargar y cargarla completamente.**

Después de no haber utilizado una batería durante mucho tiempo
Recargue la batería después de no haberla utilizado durante mucho tiempo. Si una batería cargada completamente no se utiliza durante mucho tiempo (aproximadamente 1 año), ésta se descargará. Vuelva a cargar la batería, pero en este caso su duración será más corta de lo normal. Después de varios ciclos de carga y descarga, la batería recuperará su capacidad original.

Nota sobre los terminales

Si los terminales (partes metálicas de la parte posterior) no están limpios, la duración de la batería se acortará.
Cuando los terminales no estén limpios o no haya utilizado la batería durante mucho tiempo, fije y quite la batería repetidamente. Esto mejorará el contacto. Además, frote los terminales + y – con un paño o un papel suave.

Be Sure to Observe the Following

- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d] on page 59.**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Observe lo siguiente

- **Para evitar accidentes debido a un cortocircuito, no permita que ningún objeto metálico, como un collar, entre en contacto con los terminales de la batería. Cuando lleve la batería, fíjele la cubierta de terminales. [d] de la página 59.**
- Mantenga la batería alejada del fuego.
- Mantenga la batería seca.
- No abra ni transforme la batería.
- No la someta a ninguna clase de golpes.

Maintenance Information and Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

See the next page for further information.

Información sobre el mantenimiento y precauciones

Condensación de humedad

Si traslada directamente la videocámara de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta, o en el objetivo. En tales condiciones, la cinta puede adherirse al tambor de cabezas y estropearse, o la videocámara puede no funcionar adecuadamente. Para evitar la posibilidad de daños en estas circunstancias, la videocámara dispone de sensores de humedad. Sin embargo, tenga en cuenta las precauciones siguientes.

Para más información, consulte la página siguiente.

Maintenance Information and Precautions

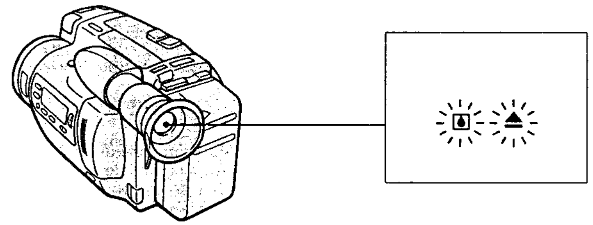
Información sobre el mantenimiento y precauciones

Inside the Camcorder

When the ▣ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour in a dry place.
The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

En el interior de la videocámara

Cuando los indicadores ▣ y ⏏ parpadeen en el visor, se habrá condensado humedad en el interior de la videocámara. En este caso, no trabajará ninguna función excepto la de expulsión del videocassette.
Extraiga el videocassette, desconecte la alimentación de la videocámara, y déjela en un lugar seco con el portacassette abierto durante 1 hora por lo menos.
La videocámara podrá volver a utilizarse cuando el indicador ▣ no aparezca al volver a conectar la alimentación.



On the Surface of the Tape

If there is moisture on the surface of the tape, when the cassette is inserted and a tape transport button is pressed, the ⏏ indicator in the viewfinder flashes.
In this case, no other functions except for tape ejection will work. **Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour in a dry place.** The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

On the Lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

En la superficie de la cinta

Si se ha condensado humedad en la superficie de la cinta, cuando inserte un videocassette y presione una tecla de transporte de la cinta, en el visor parpadeará el indicador ⏏.
En este caso, no trabajará ninguna función excepto la de expulsión del videocassette. **Extraiga el videocassette, desconecte la alimentación de la videocámara y déjela en un lugar seco con el portacassette abierto durante 1 hora por lo menos.** La videocámara podrá volver a utilizarse cuando el indicador ⏏ no aparezca al insertar un videocassette y presionar una de las teclas de transporte de la cinta.

En el objetivo

Si se condensa humedad en el objetivo, no aparecerá ningún indicador, pero la imagen se volverá borrosa. Desconecte la alimentación y no utilice la videocámara durante una hora por lo menos.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Cómo prevenir la condensación de humedad

Cuando traslade la videocámara de un lugar frío a otro cálido, coloque la videocámara en una bolsa de plástico y deje que se adapte a las condiciones ambientales de la habitación durante cierto tiempo.

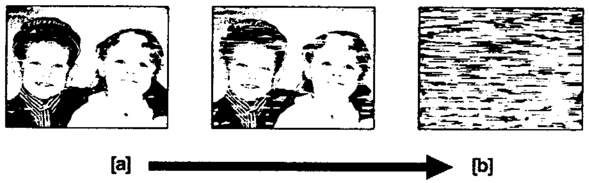
(1) No se olvide de cerrar firmemente la bolsa de plástico que contiene la videocámara.
(2) Saque la videocámara de la bolsa cuando la temperatura del aire del interior de la bolsa haya alcanzado la ambiental (después de 1 hora aproximadamente).

Video Head Cleaning

To ensure clear pictures and normal recording, clean the video heads diligently. When you find that you can not record normally, ⊗ appears in the viewfinder or playback pictures are "noisy" or hardly visible as the pictures below, the video heads may be contaminated.

Limpieza de las cabezas de vídeo

Para asegurar imágenes claras y la grabación normal, limpie frecuentemente las cabezas de vídeo. Cuando note que la videocámara no graba normalmente, en el visor aparezca ⊗, o las imágenes reproducidas sean "ruidosas" o sean difíciles de ver como se muestra abajo, es posible que las cabezas de vídeo estén contaminadas.



[a] Slight contamination
[b] Critical contamination

If this happens or not to happen, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

[a] Contaminación ligera
[b] Contaminación crítica

Cuando aparezcan estas imágenes o en otros casos, limpie las cabezas de vídeo con un cassette de limpieza V8-25CLH Sony (no suministrado). Después de la limpiza, si las imágenes siguen "ruidosas", repita la limpieza. (No repita la limpieza más de 5 veces.)

See the next page for further information.

Para más información, consulte la página siguiente.

Maintenance Information and Precautions

Información sobre el mantenimiento y precauciones

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

Removing Dust from inside the Viewfinder

(1) Pull out the viewfinder barrel until the illustrated mark appears.
(2) Turn it counterclockwise until it stops and pull it out.
(3) Clean the surface of the cover with a blower brush.

Precaución

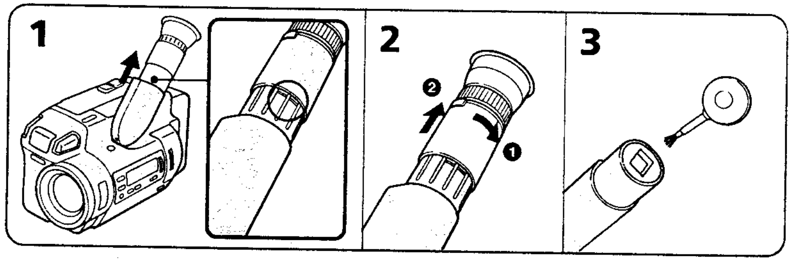
No utilice cassettes de limpieza de tipo húmedo adquiribles en tiendas del ramo, ya que podrían dañar las cabezas de vídeo.

Nota

Si el cassette de limpieza V8-25CLH no está disponible en su zona, consulte a un centro de servicios Sony.

Para quitar el polvo del interior del visor

(1) Extraiga el tubo del visor hasta que aparezca la marca ilustrada.
(2) Gírelo hacia la izquierda hasta que se detenga y quítelo.
(3) Limpie la superficie de la cubierta con un cepillo soplador.

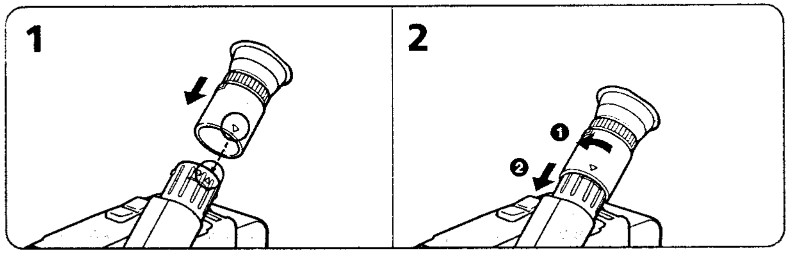


To Reattach the Viewfinder Barrel

(1) Align the mark on the viewfinder barrel with the mark on the viewfinder and push in the viewfinder barrel until it clicks.
(2) Turn it clockwise until it stops and push it in.

Para volver a colocar el tubo del visor

(1) Alinee la marca del tubo del visor con la del visor y empuje el tubo hasta que chasquee.
(2) Gírelo hacia la derecha hasta que se detenga y empújelo.



Precautions

Camcorder Operation

- Operate the camcorder on 6.0 V (battery pack) or 7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

Precauciones

Operación de la videocámara

- Alimente la videocámara con 6,0 V (batería) o 7,5 V (adaptador de CA).
- Para alimentarla con CC o CA, utilice los accesorios recomendados en este manual.
- Si dentro de la videocámara cae algún objeto sólido o líquido, desenchufe la videocámara y haga que sea revisada por personal especializado antes de reutilizarla.
- Evite tratos bruscos o golpes. Tenga especial cuidado con el objetivo.
- Cuando no vaya a utilizar la videocámara, ponga el selector POWER en OFF.
- No utilice la videocámara envuelta, porque se recalentaría.
- Mantenga la videocámara alejada de campos magnéticos intensos y vibraciones mecánicas.

See the next page for further information.

Para más información, consulte la página siguiente.

Maintenance Information and Precautions

Información sobre el mantenimiento y precauciones

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in, etc.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

AC Power Adaptor

Charging

- **Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.**
- Charge the battery pack on a flat place without vibration.
- The battery pack will get hot during charging. This is normal.
- Video equipment cannot be operated while charging the battery pack.

Do not continuously recharge a charged battery pack as that will cause the battery pack efficiency to deteriorate.

Charging temperature

The temperature range for charging is 5°C to 35°C (41°F to 95°F). However, to provide maximum battery efficiency, the recommended temperature range when charging is 10°C to 30°C (50°F to 86°F).

Cuidado del videocassette

No inserte nada en los pequeños orificios de la parte posterior del videocassette. Estos orificios se utilizan para detectar el tipo de cinta, su grosor, si la lengüeta está o no deslizada, etc.

Cuidados de la videocámara

- Cuando no vaya a utilizar la videocámara durante mucho tiempo, desconecte la fuente de alimentación y extraiga el videocassette. Conecte periódicamente la alimentación, haga funcionar las secciones de la videocámara y el reproductor, y reproduzca una cinta durante unos 3 minutos.
- Limpie el polvo del objetivo con un cepillo suave. Elimine las huellas dactilares con un paño suave.
- Limpie el cuerpo de la videocámara con un paño suave y seco, o ligeramente humedecido en una solución muy diluida de detergente. No emplee ningún tipo de disolvente ya que podría dañar la terminación.

Adaptador de CA

Carga

- **La carga repetida con cierta capacidad remanente causará la disminución de la capacidad de la batería. Sin embargo, la batería podrá recuperar la capacidad original si la descarga y vuelve a cargar completamente.**
- Cargue la batería sobre una superficie plana sin vibraciones.
- La batería se calentará durante la carga, pero esto es normal.
- Durante la carga de la batería, no podrá hacer funcionar un equipo de vídeo.

No recargue continuamente una batería cargada, ya que esto cuasará el deterioro de la eficacia de la batería.

Temperatura de carga

La gama de temperaturas para la carga es de 5 a 35°C. Sin embargo, para obtener la máxima eficacia, se recomienda una temperatura de 10 a 30°C.

Others

- The AC power cord should only be changed at a qualified service shop.
- The nameplate indicating operating voltage, power consumption, etc. is located on the bottom.
- A negligible amount of electric current will flow into the AC power adaptor (even with the selector in the center position) as long as the AC power adaptor is plugged into the wall outlet.
- Unplug the unit from the wall (mains) outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Otros

- El cable de alimentación deberá cambiarse en una estación de servicios cualificada.
- La placa que indica la tensión de alimentación, consumo, etc. está situada en la base.
- Una pequeña cantidad de corriente circulará hacia el adaptador de alimentación de CA (incluso aunque el selector esté en la posición central) mientras dicho adaptador permanezca conectado a una toma de la red.
- Cuando no vaya a utilizar la unidad durante mucho tiempo, desenchúfela de la toma de la red. Para desconectar el cable de alimentación, tire del enchufe. No tire nunca del propio cable.
- No emplee la unidad con un cable dañado, después de haberla dejado caer, o cuando esté dañada.
- Cerciórese de que ningún objeto metálico entre en contacto con las partes metálicas de la placa conectora, ya que se podría producir un cortocircuito que dañaría la unidad.
- Mantenga siempre limpios los contactos metálicos.
- No desarme la unidad.
- No golpee ni deje caer la unidad.
- Cuando esté empleando la unidad, especialmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque perturbaría la recepción de AM y la operación de vídeo.
- La unidad se calentará durante el empleo. Pero esto es normal.
- No coloque la unidad en lugares:
  - Extremadamente cálidos o fríos
  - Polvorientos o sucios
  - Muy húmedos
  - Sujetos a vibraciones

Si surge alguna dificultad, desenchufe la unidad y póngase en contacto con su proveedor Sony.

Using Your Camcorder Abroad

Each country has its own electricity and TV colour systems. Before using your camcorder abroad, check the following points:

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Difference in Colour Systems

This camcorder is a PAL system-based camcorder. If you want to view the playback picture on a TV, it must be a PAL system-based TV or a SECAM system-based TV with PAL-SECAM transcoder. Check the following alphabetical list.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany (former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Utilización de la videocámara en el extranjero

Cada país posee su propio sistema de suministro eléctrio y sistema de televisión en color. Antes de utilizar su videocámara en el extranjero, verifique los puntos siguientes:

Fuentes de alimentación

Usted podrá utilizar su videocámara con el adaptador de CA suministrado en cualquier país donde la tensión de la red sea de 110 a 240 V CA, 50/60 Hz.

Diferencia en los sistemas de color

Esta videocámara está basada en el sistema PAL. Si desea ver la imagen reproducida en un televisor, éste deberá estar basado en el sistema PAL o el sistema SECAM con transcodificador PAL-SECAM. Compruebe la lista siguiente en orden alfabético.

Paises con el sistema PAL
Alemania (antigua Alemania Occidental), Australia, Austria, Bélgica, China, Dinamarca, España, Finlandia, Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malasia, Noruega, Nueva Zelanda, Portugal, Singapur, Suecia, Suiza, Tailandia, etc.

País con el sistema PAL-M
Brasil

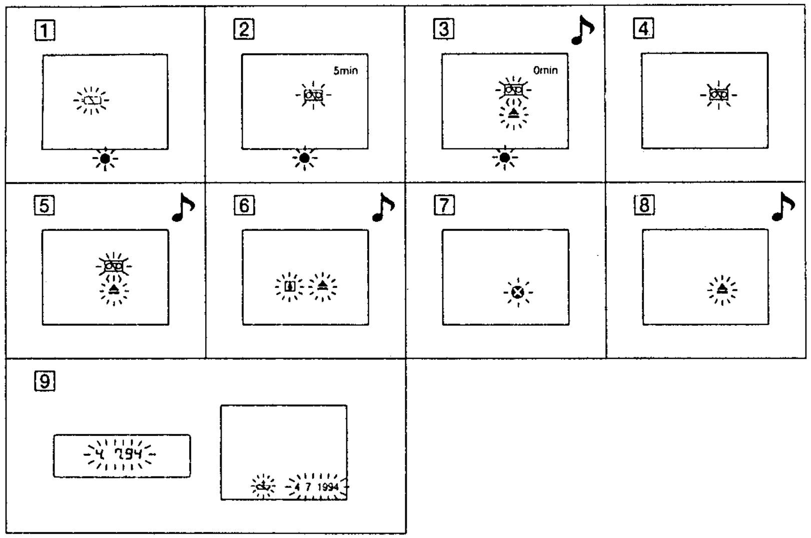
Países con el sistema PAL-N
Argentina, Paraguay, Uruguay

Países con el sistema NTSC
Bolivia, Canadá, Centroamérica, Colombia, Corea, Chile, Ecuador, EE.UU., Filipinas, Islas Bahamas, Jamaica, Japón, México, Perú, Surinam, Taiwan, Venezuela, etc.

Países con el sistema SECAM
Bulgaria, Francia, Guayana, Hungría, Irán, Iraq, Mónaco, Polonia, antigua Unión Soviética, etc.

Warning indicators

If indicators flash in the viewfinder and display window or a caution lamp on the camcorder flashes, check the following:
♪ : You can hear the beep sound when the BEEP is ON in the menu system.



1 The battery is weak or dead.
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 The tape is near the end.
The flashing is slow.

3 The tape has run out.
The flashing becomes rapid.

4 No tape has been inserted.

5 The tab on the tape is out (red).

6 Moisture condensation has occurred. (p.63)

7 The video heads may be contaminated. (p.65)

8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 The lithium battery is weak or is not installed. (p.9, 10)

Indicadores de advertencia

Si parpadean indicadores en el visor, o una lámpara de precaución en la videocámara, consulte la tabla siguiente:
♪ : Podrá oír pitidos si ajusta BEEP a ON en el sistema del menú.

1 La batería está débil o agotada.
Parpadeo lento: La batería está débil.
Parpadeo rápido: La batería está agotada.

2 La cinta está a punto de finalizar.
Parpadeará lentamente.

3 La cinta ha finalizado.
Parpadeará rápidamente.

4 No hay videocassette insertado.

5 La lengüeta del videocassette está al descubierto (roja).

6 Se ha producido condensación de humedad (p.63).

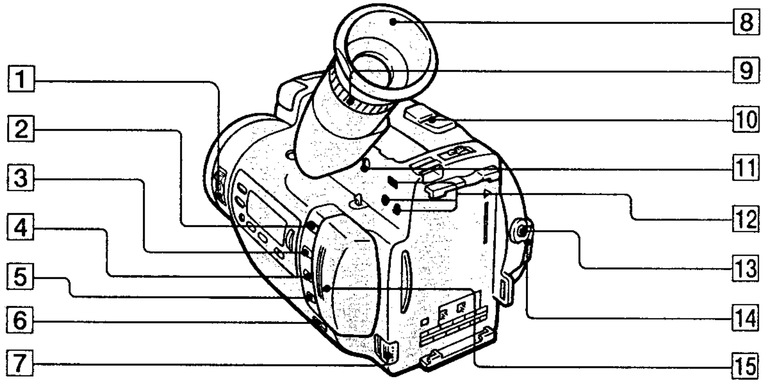
7 Las cabezas de vídeo pueden estar contaminadas (p.65).

8 Se ha producido algún otro problema.
Desconecte la fuente de alimentación y póngase en contacto con su proveedor Sony o una estación de servicio autorizado local.

9 La pila de litio está débil, o no está colocada (p.9, 10).

Identifying the Parts

Identificación de las partes

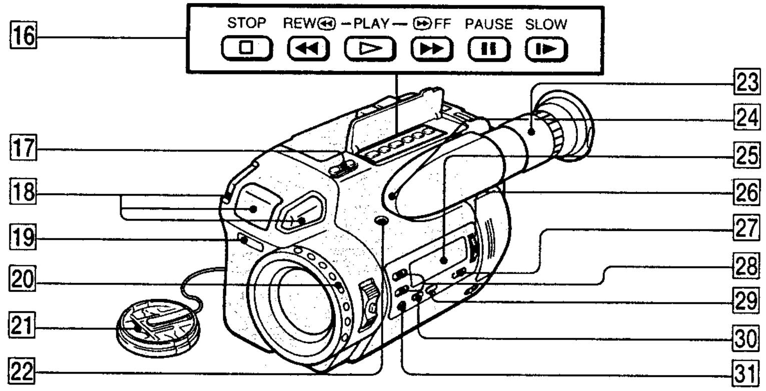


1 **POWER switch** (p.17, 25)
2 **FOCUS button** (p.37)
3 **EXPOSURE button** (p.39)
4 **PROGRAM AE button** (p.41)
5 **WHT BAL (white balance)** (p.43)
6 **STEADY SHOT switch** (p.19)
7 **BATT (battery eject) knob** (p.8)
8 **Eyecup** (p.15)
9 **Viewfinder lens adjustment ring** (p.14)
10 **Power zoom button** (p.20, 37)
11 **REC START/STOP button** (p.15)
12 **Menu operation buttons** (p.31, 52)
13 **START/STOP button** (p.17)
14 **STANDBY switch** (p.17)
15 **AUTO LOCK cover** (p.17, 35)

1 **Selector de alimentación (POWER)** (p.17, 25)
2 **Tecla de enfoque (FOCUS)** (p.37)
3 **Tecla de exposición (EXPOSURE)** (p.39)
4 **Tecla de exposición automática programada (PROGRAM AE)** (p.41)
5 **Tecla de equilibrio del blanco (WHT BAL)** (p.43)
6 **Interruptor de videofilmación estable (STEADY SHOT)** (p.19)
7 **Mando de expulsión de la batería (BATT)** (p.8)
8 **Ocular** (p.15)
9 **Anillo de ajuste de la lente del visor** (p.14)
10 **Tecla del zoom motorizado** (p.20, 37)
11 **Tecla de inicio/parada de la grabación (REC START/STOP)** (p.15)
12 **Teclas de operación del menú** (p.31, 52)
13 **Tecla de inicio/parada (START/STOP)** (p.17)
14 **Interruptor de espera (STANDBY)** (p.17)
15 **Cubierta de bloqueo automático (AUTO LOCK)** (p.17, 35)

Identifying the Parts

Identificación de las partes



16 **Tape transport buttons** (p.25)
□ STOP
◀◀ REW (rewind)
▷ PLAY (playback)
▶▶ FF (fastforward)
❚❚ PAUSE
❚▶ SLOW (slow playback)

17 **EDITSEARCH button** (p.22)

18 **Built-in microphone (stereo/zoom)**

19 **Remote sensor** (p.84)
Aim the Remote commander here for remote control

20 **FOCUS ring** (p.37)

21 **Lens cap** (p.17)

22 **FADER button** (p.34)

23 **Viewfinder** (p.14)

24 **Camera recording/battery lamp**

25 **Display window** (p.85, 87)

26 **Exposure dial** (p.38, 39)

27 **INDEX MARK button** (p.48)

28 **DATE(+) and TIME(NEXT) buttons** (p.12)

29 **COUNTER/TIME CODE button** (p.18)

30 **ZERO MEM (Zero memory)** (p.45, 46)

31 **COUNTER RESET button** (p.45, 46)

16 **Teclas de transporte de la cinta** (p.25)
□ STOP (parada)
◀◀ REW (rebobinado)
▷ PLAY (reproducción)
▶▶ FF (avance rápido)
❚❚ PAUSE (pausa)
❚▶ SLOW (reproducción a cámara lenta)

17 **Tecla de búsqueda para edición (EDITSEARCH)** (p.22)

18 **Micrófono incorporado (estéreo/zoom)**

19 **Sensor remotor (FOCUS)** (p.84)
Apunte con el telemando hacia este sensor para controlar a distancia la videocámara.

20 **Anillo de enfoque (FOCUS)** (p.37)

21 **Tapa del objetivo** (p.17)

22 **Tecla de aumento gradual/desvanecimiento (FADER)** (p.34)

23 **Visor** (p.14)

24 **Lámpara indicadora de videofilmación/estado de la batería**

25 **Ventanilla visualizadora** (p.86, 87)

26 **Dial de exposición** (p.38, 39)

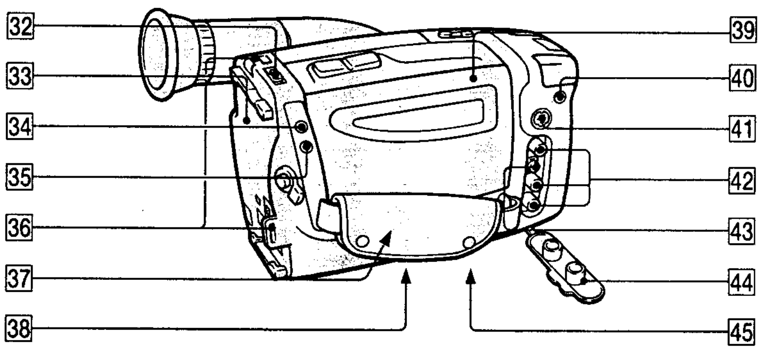
27 **Tecla de marcación de señales de índice (INDEX MARK)** (p.48)

28 **Teclas de ajuste de la fecha (DATE(+)) y la hora (TIME(NEXT))** (p.12)

29 **Tecla del contador/código de tiempo (COUNTER/TIME CODE)** (p.18)

30 **Tecla de memorización de cero (ZERO MEM)** (p.45, 46)

31 **Tecla de puesta a cero del contador (COUNTER RESET)** (p.45, 46)



32 **EJECT switch** (p.13)

33 **Battery mounting surface** (p.8)

34 **REMOTE ⊄ (LANC) control jack**
⊄ stands for Local Application Control Bus System. The ⊄ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

35 **∩ (headphones) jack (stereo mini jack)** (p.23)

36 **Hooks for shoulder strap** (p.84)

37 **Grip strap** (p.15)

38 **Lithium battery compartment** (p.9)

39 **Cassette holder** (p.13)

40 **MIC jack (PLUG IN POWER)**
Connect an optional external microphone (stereo or monaural). This jack also accepts a "plug-in-power" microphone.

41 **S VIDEO output jack** (p.23)

42 **Audio/Video output jacks** (p.23)

43 **RFU DC OUT (RFU adaptor DC output) jack** (p.24)

44 **Jack cover**

45 **Tripod receptacle** (p.15)

32 **Mando de expulsión del videocassette (EJECT)** (p.13)

33 **Superficie de montaje de la batería** (p.8)

34 **Toma de control remoto (REMOTE ⊄ LANC)**
⊄ significa sistema de bus para aplicación local. La toma ⊄ se emplea para controlar el movimiento de la cinta de equipos de vídeo y dispositivos periféricos conectados a la misma. Esta toma posee la misma función que los conectores indicados con CONTROL L o REMOTE.

35 **Toma para auriculares (∩) (minitoma estéreo)** (p.23)

36 **Ganchos para la bandolera** (p.84)

37 **Correa de la empuñadura** (p.15)

38 **Compartimiento de la pila de litio** (p.9)

39 **Portacassette** (p.13)

40 **Toma para micrófono (MIC) alimentado a través de la clavija (PLUG IN POWER)**
Conéctele un micrófono externo opcional (estéreo o monoaural). Esta toma también acepta un micrófono alimentado a través de la clavija.

41 **Toma de salida de vídeo S (S VIDEO)** (p.23)

42 **Tomas de salida de audio/vídeo** (p.23)

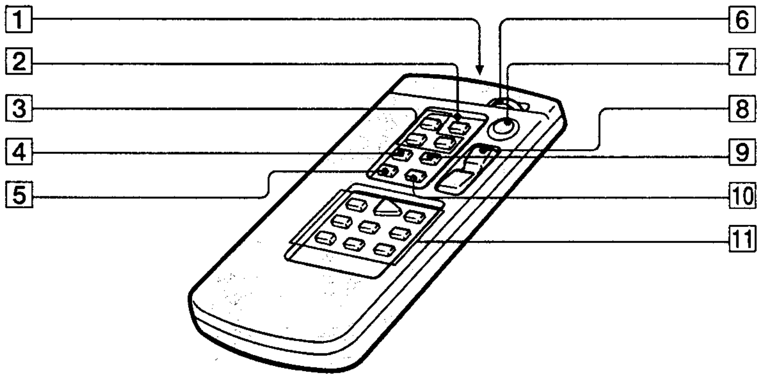
43 **Toma de salida de CC para el adaptador de RF (RFU DC OUT)** (p.24)

44 **Tapón para tomas**

45 **Receptáculo para trípode** (p.15)

Wireless Remote Commander

Telemando inalámbrico



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 **DISPLAY button**

3 **INDEX button** (p.48, 49, 50, 51)
INDEX: Press to scan or search for the desired programme on the tape on which index signals were marked.
INDEX MARK: Press to mark an index signal.
INDEX ERASE: Press to erase the index signal.

4 **TIME CODE WRITE button** (p.53)
To write the RC time code on a prerecorded tape, set the camcorder to playback pause mode, press this button and press ▷ or **II**.

5 **COUNTER RESET button**

1 **Transmisor**
Para controlar la videocámara con el telemando, active el selector POWER de la videocámara y apunte este transmisor hacia el sensor remoto.

2 **Tecla de visualización (DISPLAY)**

3 **Teclas de índice** (p.48, 49, 50, 51)
INDEX (índice): Presione para explorar o buscar el programa deseado en una cinta con señales de índice marcadas.
INDEX MARK (marcación de señales de índice): Presione para marcar señales de índice.
INDEX ERASE (borrado de señales de índice): Presione para borrar señales de índice.

4 **Tecla de escritura del código de tiempo (TIME CODE WRITE)** (p.53)
Para escribir el código de tiempo RC en una cinta previamente grabada, ponga la videocámara en el modo de reproducción en pausa, presione esta tecla y presione ▷ o **II**.

5 **Tecla de puesta a cero del contador (COUNTER RESET)**

6 **HOLD switch**
Slide this switch in the direction of the arrow to prevent the buttons from being accidentally pressed.
Before using this Remote Commander, slide in the direction opposite the arrow.

7 **START/STOP button**

8 **Power zoom button**

9 **DATA CODE button** (p.27, 28)
To display the recording date or time in the viewfinder during playback, press this button. Each time you press it, the display changes to the date, time and no indicator, cyclically.

10 **ZERO MEM button**

11 **Tape transport buttons X2** (p.25, 26)
Other buttons function the same as those on the camcorder.

6 **Interruptor de bloqueo (HOLD)**
Deslícelo en el sentido de la flecha para impedir la presión accidental de las teclas.
Antes de utilizar el telemando, deslice este interruptor en el sentido opuesto al de la flecha.

7 **Tecla de inicio/parada (START/STOP)**

8 **Tecla del zoom motorizado**

9 **Tecla de código de datos (DATA CODE)** (p.27, 28)
Presiónela para visualizar la fecha o la hora de grabación en el visor durante la reproducción. Cada vez que presione esta tecla, la visualización cambiará cíclicamente a la fecha, hora y sin indicador.

10 **Tecla de memorización de cero (ZERO MEM)**

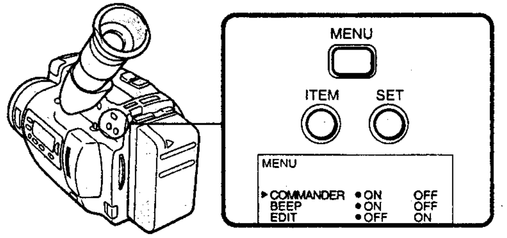
11 **Teclas de transporte de la cinta a velocidad doble (x2)** (p.25, 26)
Las otras teclas funcionarán igual que las de la videocámara.

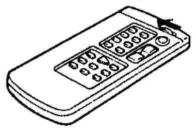
Using the Remote Commander

Make sure that the COMMANDER mode is set to ON in the menu system on the camcorder, and that the HOLD switch on the Remote Commander is not working.

Utilización del telemando

Asegúrese de que el modo COMMANDER esté en ON en el sistema del menú de la videocámara, y de que el interruptor HOLD del telemando no esté activado.

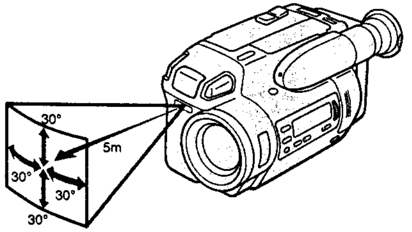




See the next page for further information.

Para más información, consulte la página siguiente.

Remote Control Direction



Notes on the Remote Commander
- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Attaching the Shoulder Strap

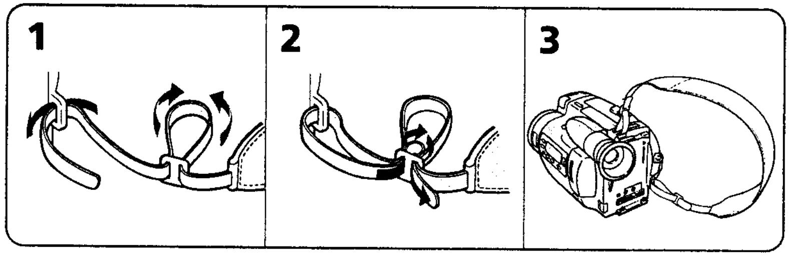
Attach the supplied shoulder strap to the hooks for the shoulder strap (p.81)

Área controlable mediante el telemando

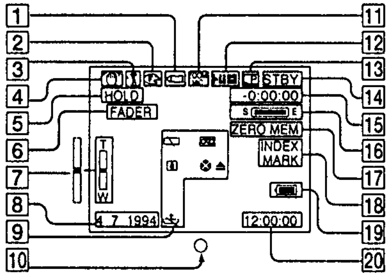
Notas sobre el telemando
- Mantenga el sensor remoto alejado de luces intensas, como la directa del sol u otras de iluminación intensa. De lo contrario, el telemando no funcionará adecuadamente.
- Asegúrese de que no haya ningún obstáculo entre el telemando y el sensor remoto.
- Esta videocámara funciona en el modo de mando VTR 2. El modo de mando (1, 2 y 3) se utiliza para distinguir esta videocámara de otras videograbadoras Sony o para evitar una operación errónea. Si utiliza otra videograbadora Sony en el modo de mando VTR 2, se recomienda cambiarlo o cubrir el sensor remoto de la videograbadora con un papel negro.

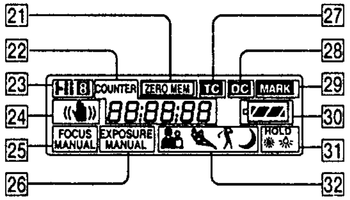
Fijación de la bandolera

Fije la bandolera suministrada a los ganchos (p.81).

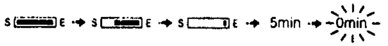


In the Display Window and the Viewfinder

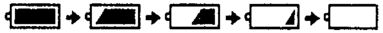




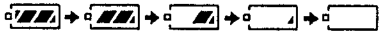
1. Wind indicator (p.19)
2. Manual focusing (p.37)
3. **PROGRAM AE indicator** (p.40, 41)
4. **STEADY SHOT indicator** (p.19)
5. **White balance mode** (p.43)
6. **FADER indicator** (p.34)
7. **Power zoom indicator** (p.20)/**Exposure indicator** (p.38)
8. **Data code** (p.28)
9. **Warning indicators** (p.87)
10. **Recording lamp/Battery lamp**
11. **ZOOM MIC indicator** (p.20)
12. **Playing back or recording in Hi8 format**
13. **Indicates the recording mode when recording/playing back a tape when you play back a tape recorded in LP (SP) mode, the LP (SP) indicator appears in the viewfinder.**
14. **Tape transport mode**
15. **Tape counter and RC time cord** (p.18)
16. **Remaining tape indicator**



17. **ZERO MEM indicator** (p.44, 45, 46, 47)
18. **INDEX MARK indicator** (p.48)
19. **Remaining battery indicator** (p.60)



20. **Date and Time** (p.12)
21. **ZERO MEM indicator** (p.44, 45, 46, 47)
22. **Tape counter** (p.18), **time or date indicator** (p.12) **and RC time cord** (p.18)
23. **Playing back or recording in Hi8 format**
24. **STEADY SHOT indicator** (p.19)
25. **FOCUS MANUAL indicator** (p.37)
26. **EXPOSURE MANUAL indicator** (p.39)
27. **Time code indicator** (p.18)
28. **Data code indicator** (p.28)
29. **MARK indicator** (p.48)
30. **Remaining battery indicator** (p.60)



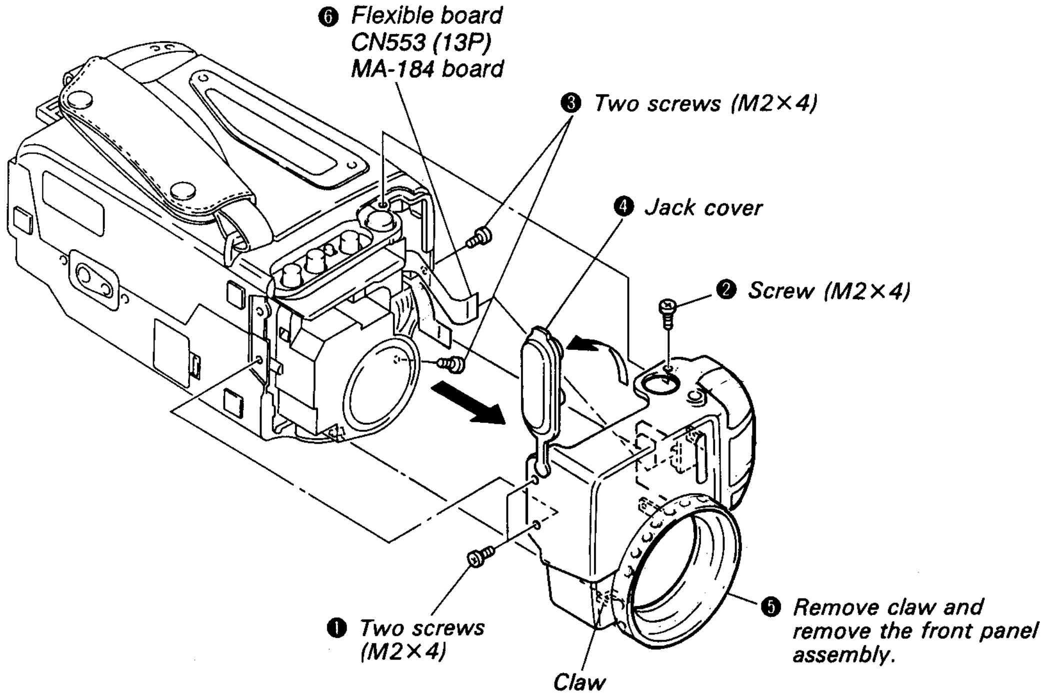
31. **White balance mode** (p.43)
32. **PROGRAM AE indicator** (p.40, 41)

SECTION 2

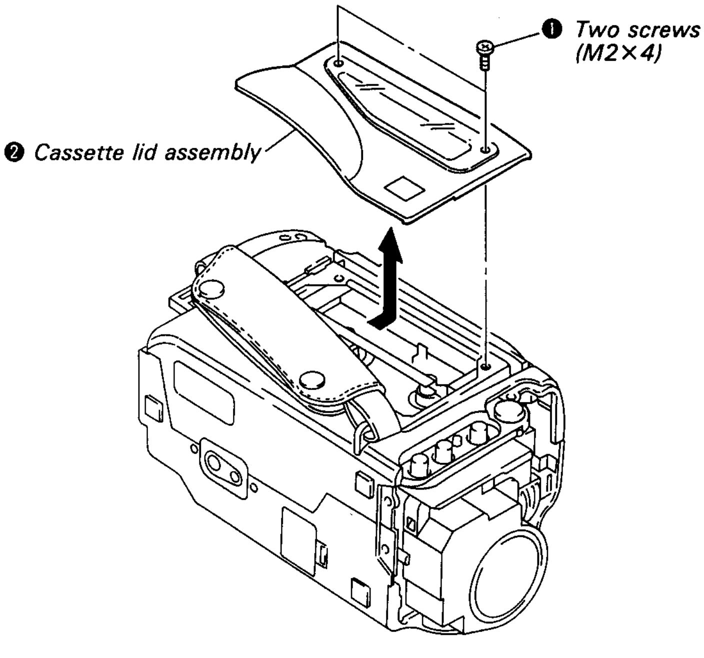
DESASSEMBLY

NOTE : Follow the disassembly procedure in the numerical order given.

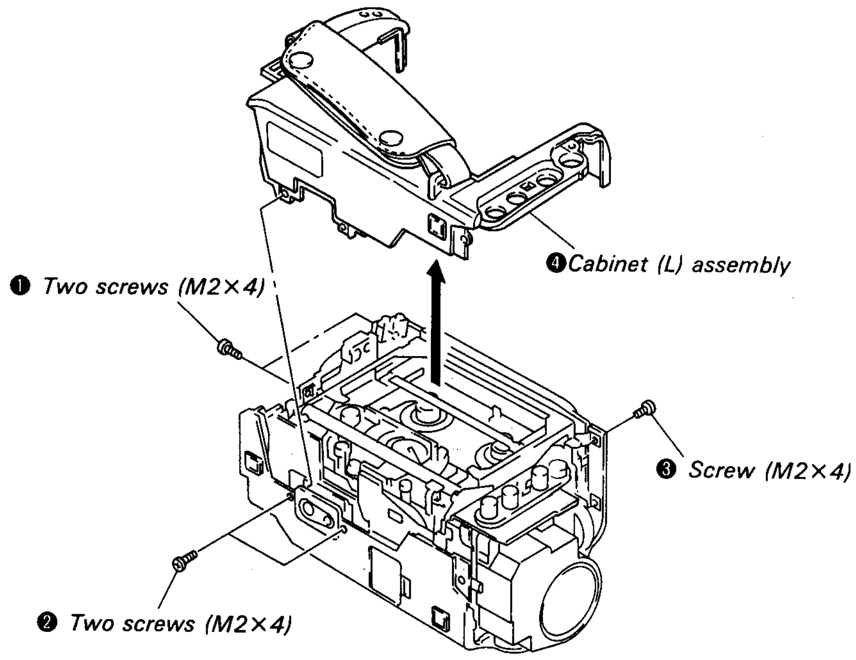
2-1. REMOVAL OF FRONT PANEL ASSEMBLY


❻ Flexible board
CN553 (13P)
MA-184 board
❸ Two screws (M2×4)
❹ Jack cover
❷ Screw (M2×4)
❶ Two screws
(M2×4)
Claw
❺ Remove claw and
remove the front panel
assembly.

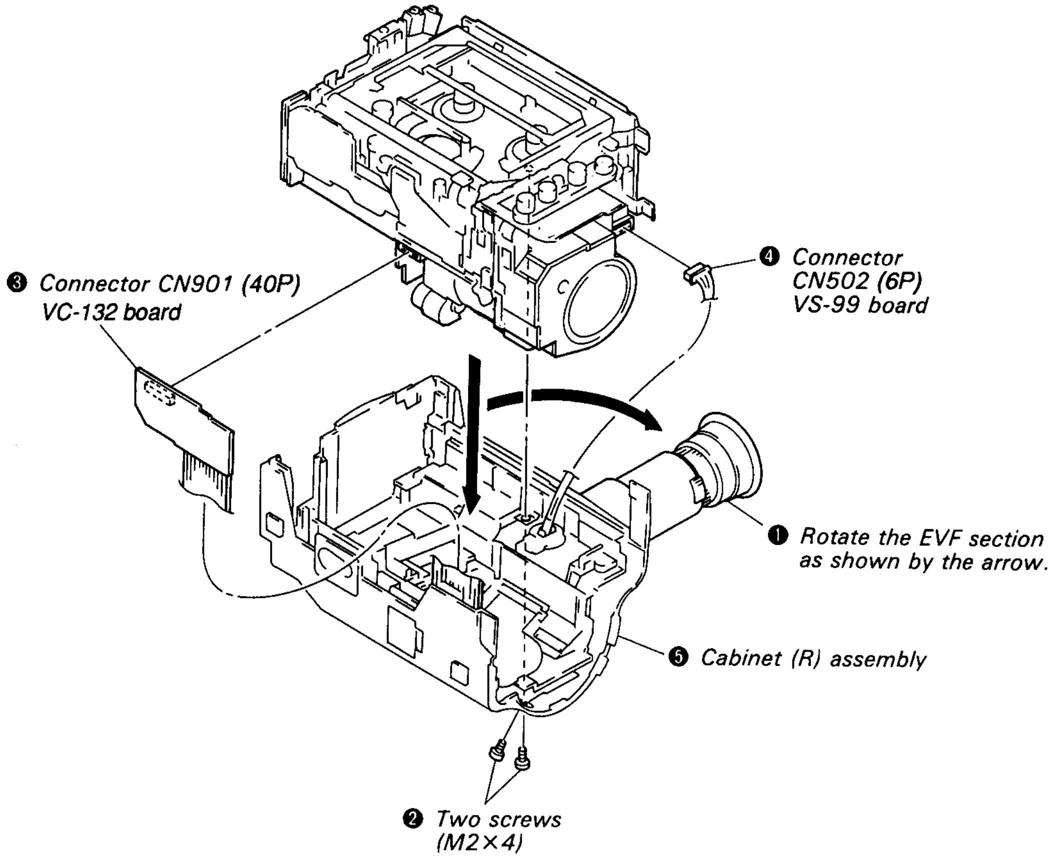
2-2. REMOVAL OF CASSETTE LID ASSEMBLY


❶ Two screws
(M2×4)
❷ Cassette lid assembly

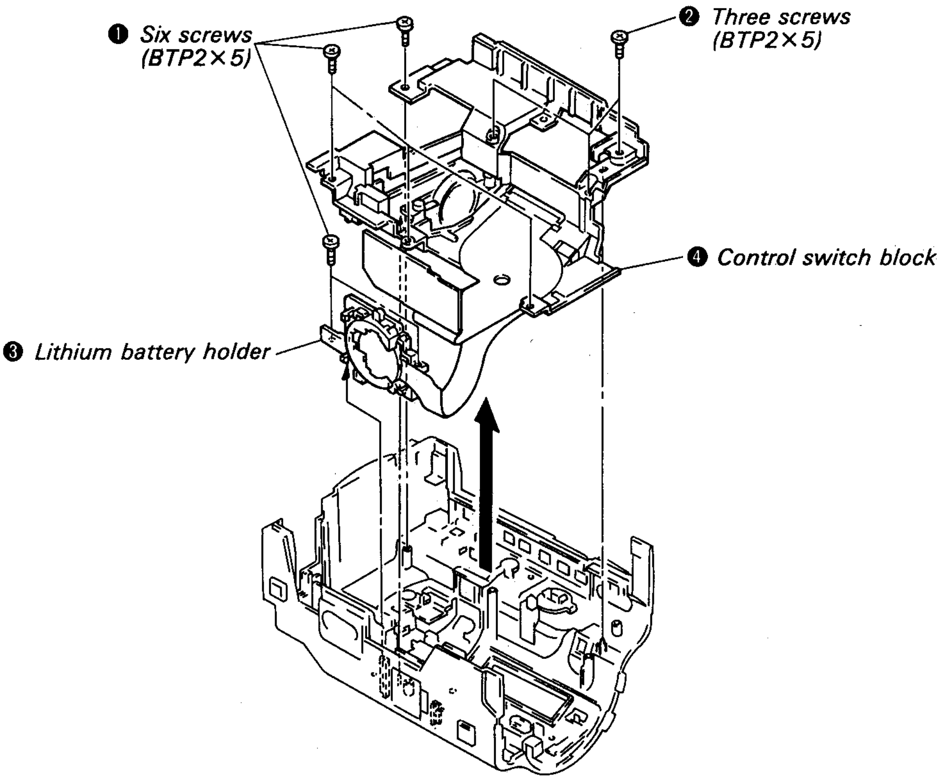
2-3. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws (M2×4)
❷ Two screws (M2×4)
❸ Screw (M2×4)
❹Cabinet (L) assembly

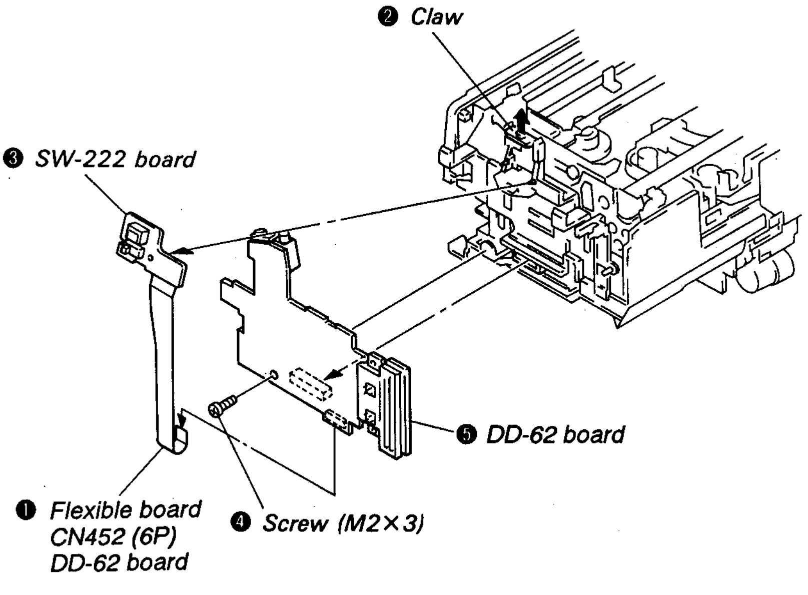
2-4. REMOVAL OF CABINET (R) ASSEMBLY


❶ Rotate the EVF section as shown by the arrow.
❷ Two screws (M2×4)
❸ Connector CN901 (40P) VC-132 board
❹ Connector CN502 (6P) VS-99 board
❺ Cabinet (R) assembly

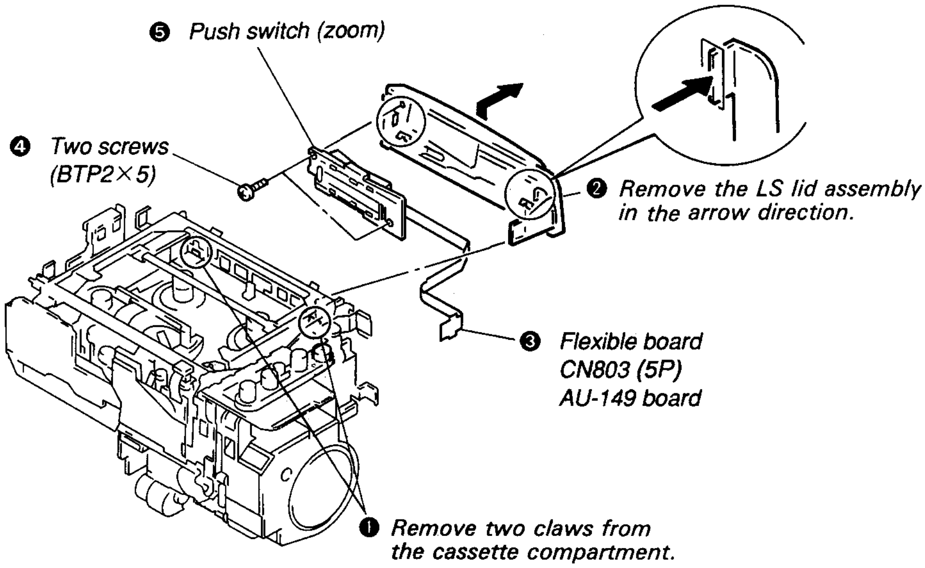
2-5. REMOVAL OF CONTROL SWITCH BLOCK


❶ Six screws (BTP2×5)
❷ Three screws (BTP2×5)
❹ Control switch block
❸ Lithium battery holder

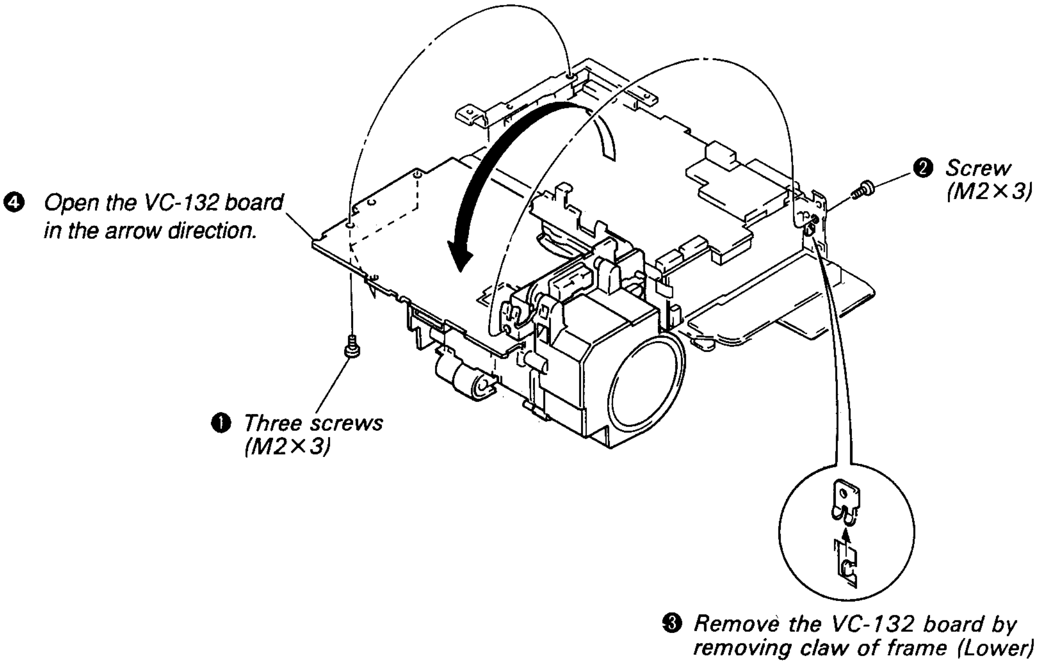
2-6. REMOVAL OF DD-62 BOARD AND SW-222 BOARDS


❷ Claw
❸ SW-222 board
❺ DD-62 board
❶ Flexible board CN452 (6P) DD-62 board
❹ Screw (M2×3)

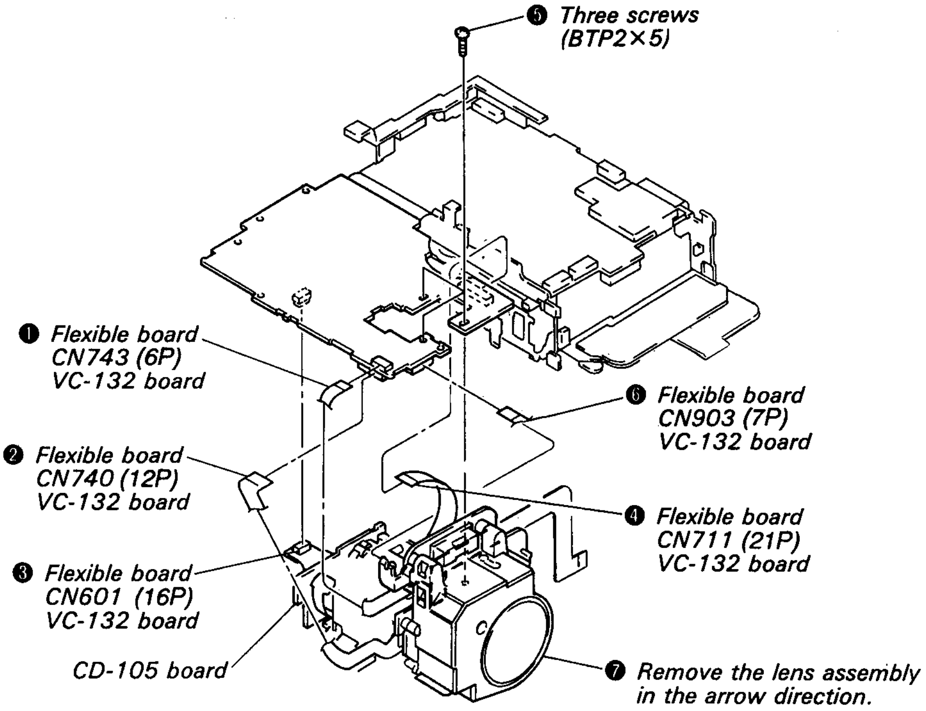
2-7. REMOVAL OF LS LID ASSEMBLY


❺ Push switch (zoom)
❹ Two screws (BTP2×5)
❷ Remove the LS lid assembly in the arrow direction.
❸ Flexible board CN803 (5P) AU-149 board
❶ Remove two claws from the cassette compartment.

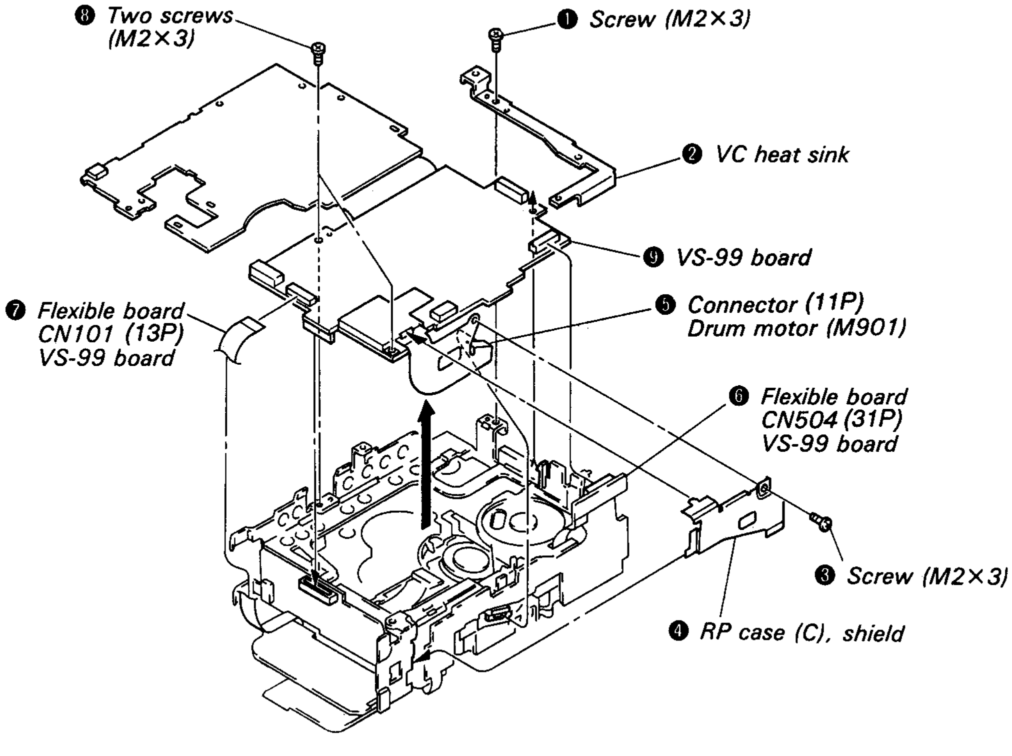
2-8. OPENING OF VC-132 BOARD


❹ Open the VC-132 board in the arrow direction.
❷ Screw (M2×3)
❶ Three screws (M2×3)
❸ Remove the VC-132 board by removing claw of frame (Lower)

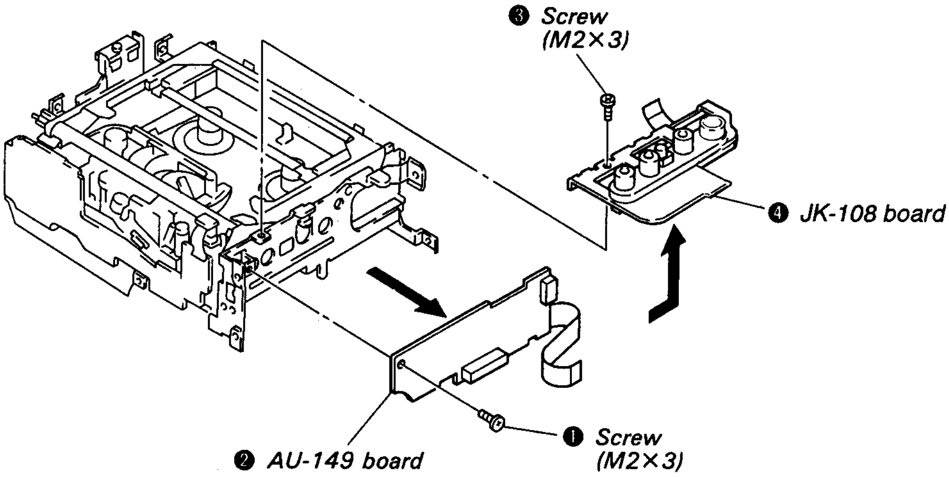
2-9. REMOVAL OF LENS ASSEMBLY (CD-105 BOARD)


❺ Three screws (BTP2×5)
❶ Flexible board CN743 (6P) VC-132 board
❻ Flexible board CN903 (7P) VC-132 board
❷ Flexible board CN740 (12P) VC-132 board
❹ Flexible board CN711 (21P) VC-132 board
❸ Flexible board CN601 (16P) VC-132 board
CD-105 board
❼ Remove the lens assembly in the arrow direction.

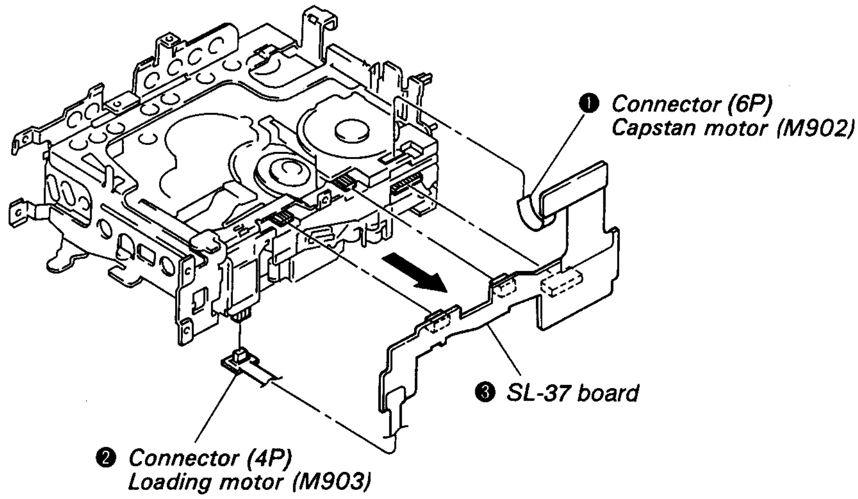
2-10. REMOVAL OF VS-99 BOARD


❽ Two screws (M2×3)
❶ Screw (M2×3)
❷ VC heat sink
❾ VS-99 board
❼ Flexible board CN101 (13P) VS-99 board
❺ Connector (11P) Drum motor (M901)
❻ Flexible board CN504 (31P) VS-99 board
❸ Screw (M2×3)
❹ RP case (C), shield

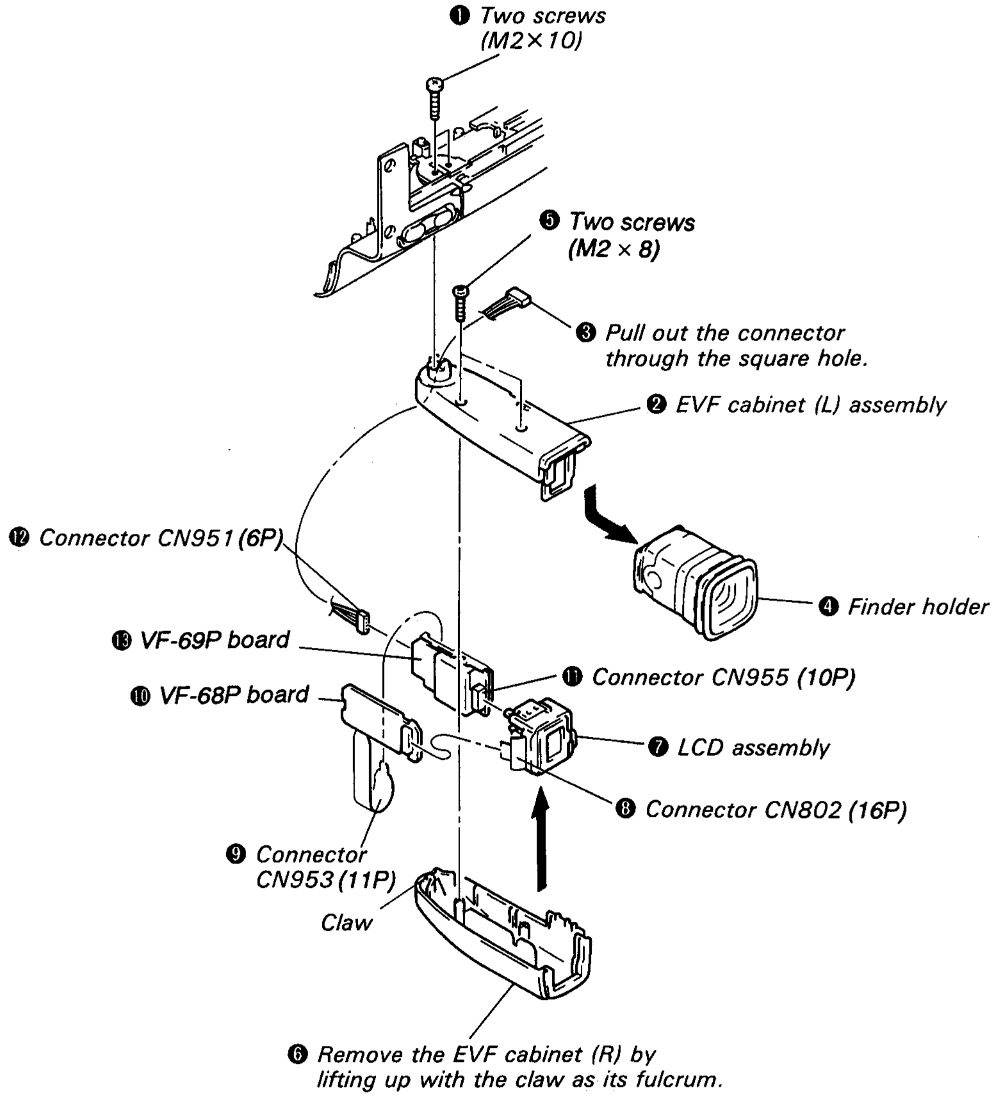
2-11. REMOVAL OF JK-108 AND AU-149 BOARDS


❸ Screw
(M2×3)
❹ JK-108 board
❷ AU-149 board
❶ Screw
(M2×3)

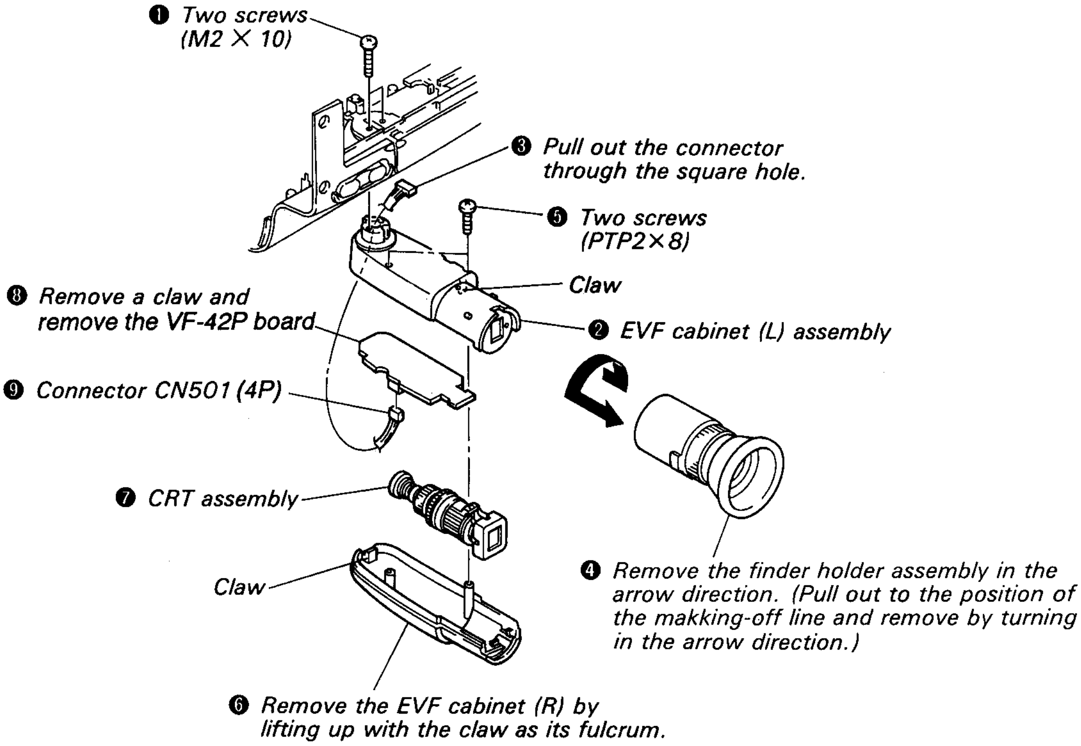
2-12. REMOVAL OF SL-37 BOARD


❶ Connector (6P)
Capstan motor (M902)
❸ SL-37 board
❷ Connector (4P)
Loading motor (M903)

2-13. REMOVAL OF EVF ASSEMBLY (VF-68P/69P BOARD)
(E, Australian, Tourist model)


❶ Two screws (M2×10)
❺ Two screws (M2 × 8)
❸ Pull out the connector through the square hole.
❷ EVF cabinet (L) assembly
⓬ Connector CN951 (6P)
❹ Finder holder
⓭ VF-69P board
⓫ Connector CN955 (10P)
⓾ VF-68P board
❼ LCD assembly
❽ Connector CN802 (16P)
❾ Connector CN953 (11P)
Claw
❻ Remove the EVF cabinet (R) by lifting up with the claw as its fulcrum.

2-14. REMOVAL OF EVF ASSEMBLY (VF-42P BOARD) (AEP, UK model)


❶ Two screws (M2 X 10)
❸ Pull out the connector through the square hole.
❺ Two screws (PTP2×8)
❽ Remove a claw and remove the VF-42P board
Claw
❷ EVF cabinet (L) assembly
❾ Connector CN501 (4P)
❼ CRT assembly
Claw
❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the makking-off line and remove by turning in the arrow direction.)
❻ Remove the EVF cabinet (R) by lifting up with the claw as its fulcrum.

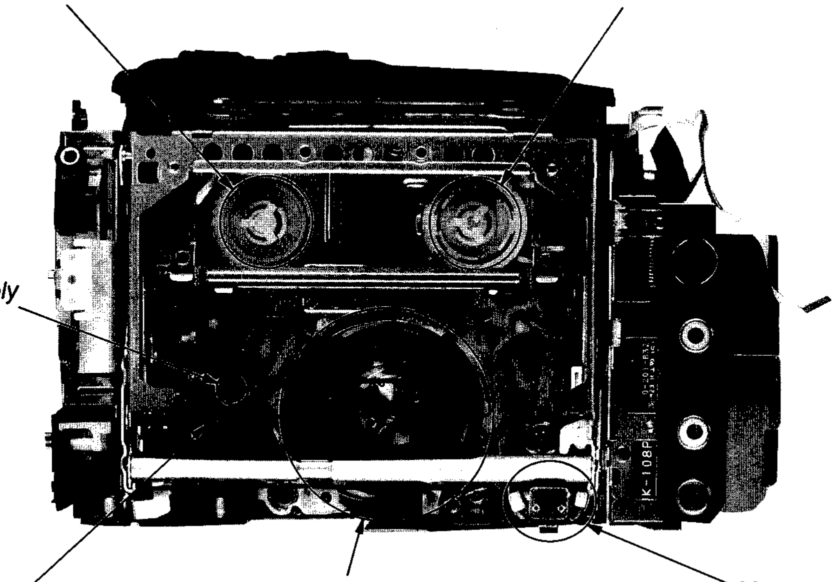
2-15. INTERNAL VIEWS

— Left side —

T reel table assembly
X-3941-274-1

S reel table assembly
X-3941-275-X

Pinch roller assembly
X-3695-416-1



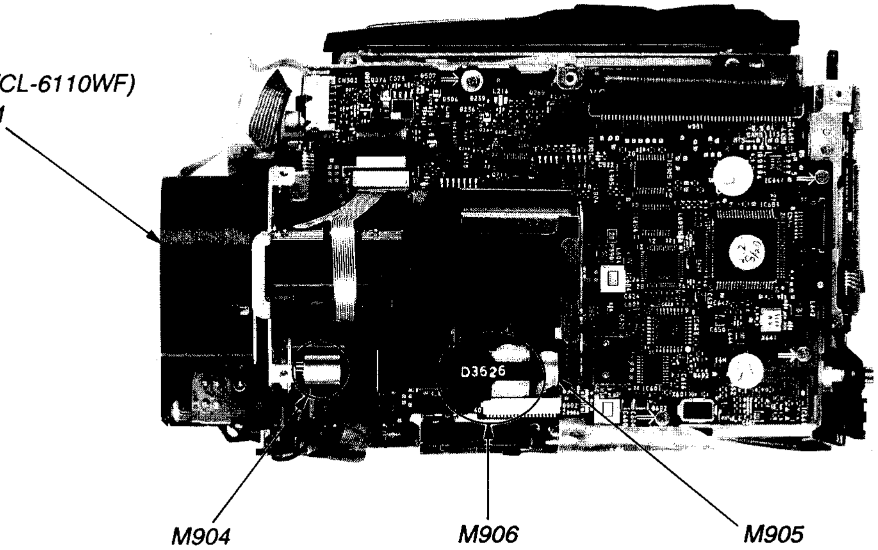
M902
Capstan motor(SCE-0101A)
8-835-477-01

M901
Drum assembly(DGH-96A-R)
A-7048-669-A
Upper drum assembly(DGR-96-R)
A-7049-610-A

M903
Loading motor assembly
A-7040-304-A

— Right Side —

Zoom lens(VCL-6110WF)
1-547-635-21

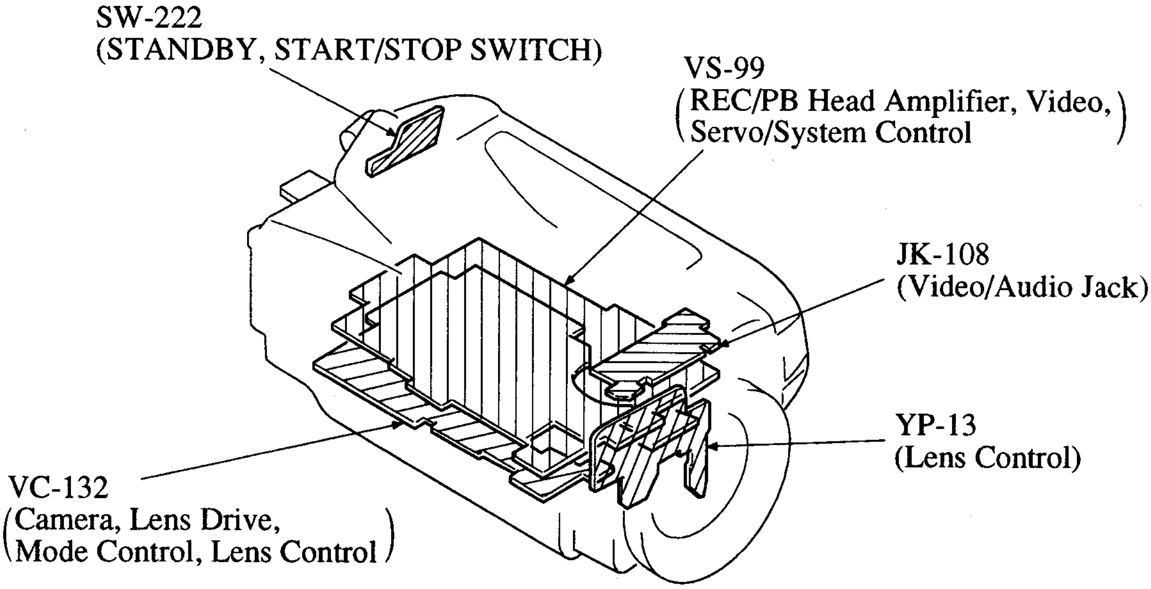


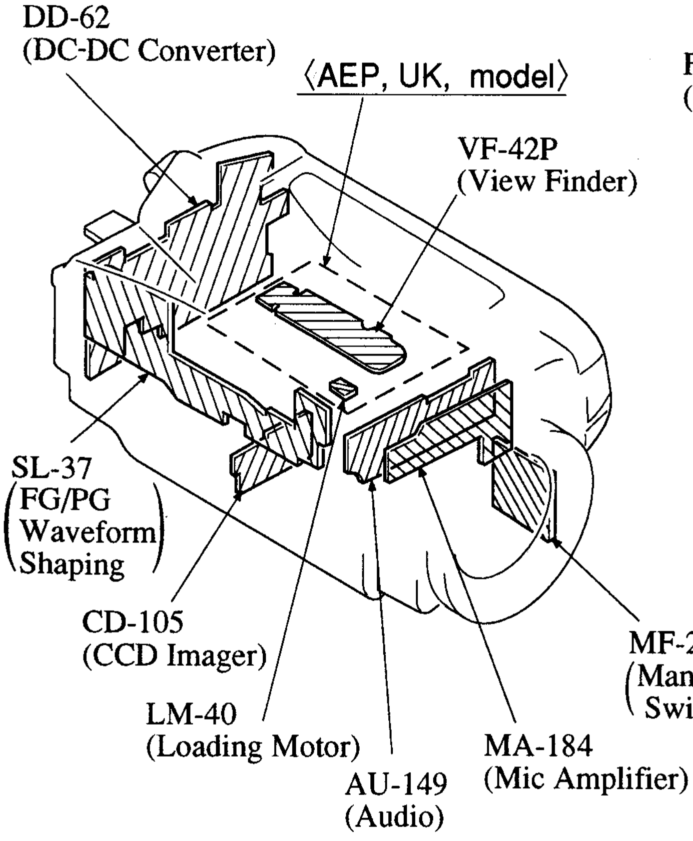
M904
IRIS meter assembly
3-708-792-01

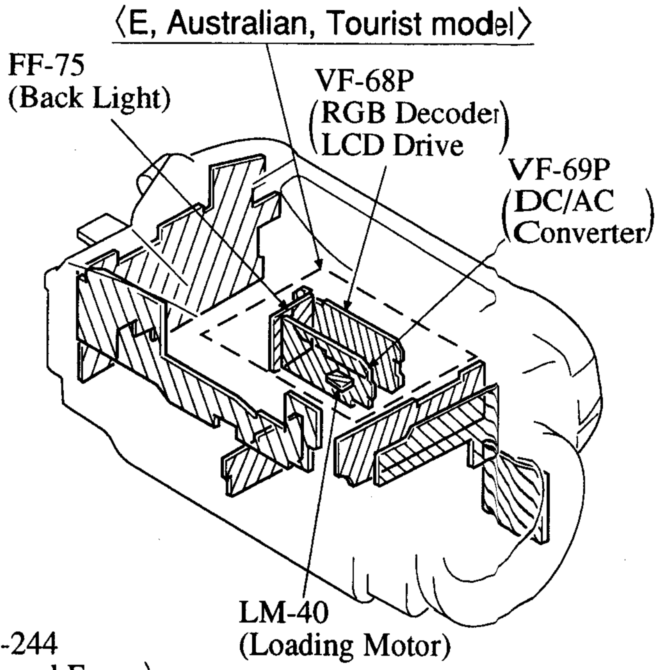
M906
Zoom motor assembly
3-708-749-01

M905
Focus motor assembly
3-708-793-01

2-16. CIRCUIT BOARDS LOCATION

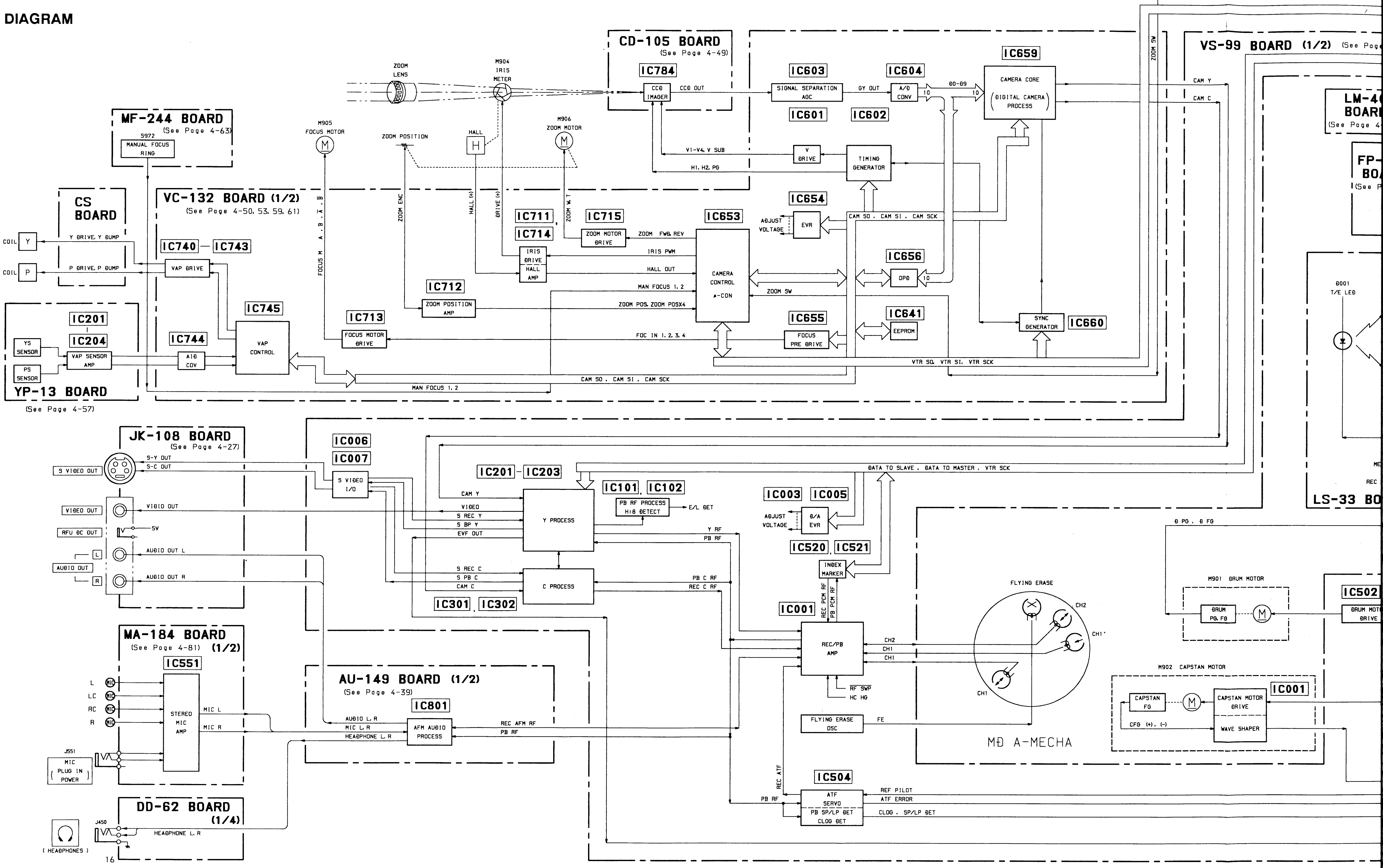

SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)

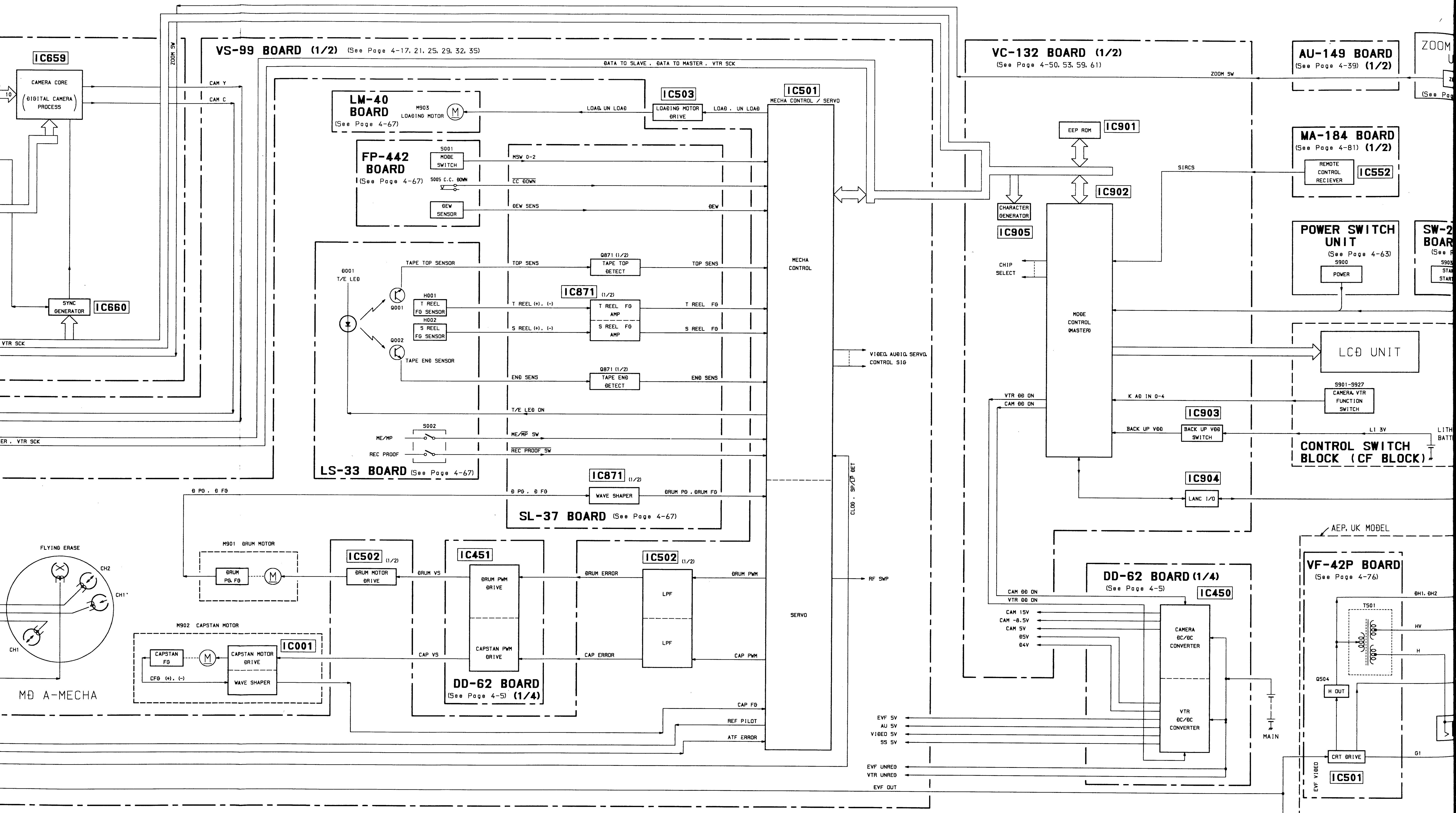

DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)

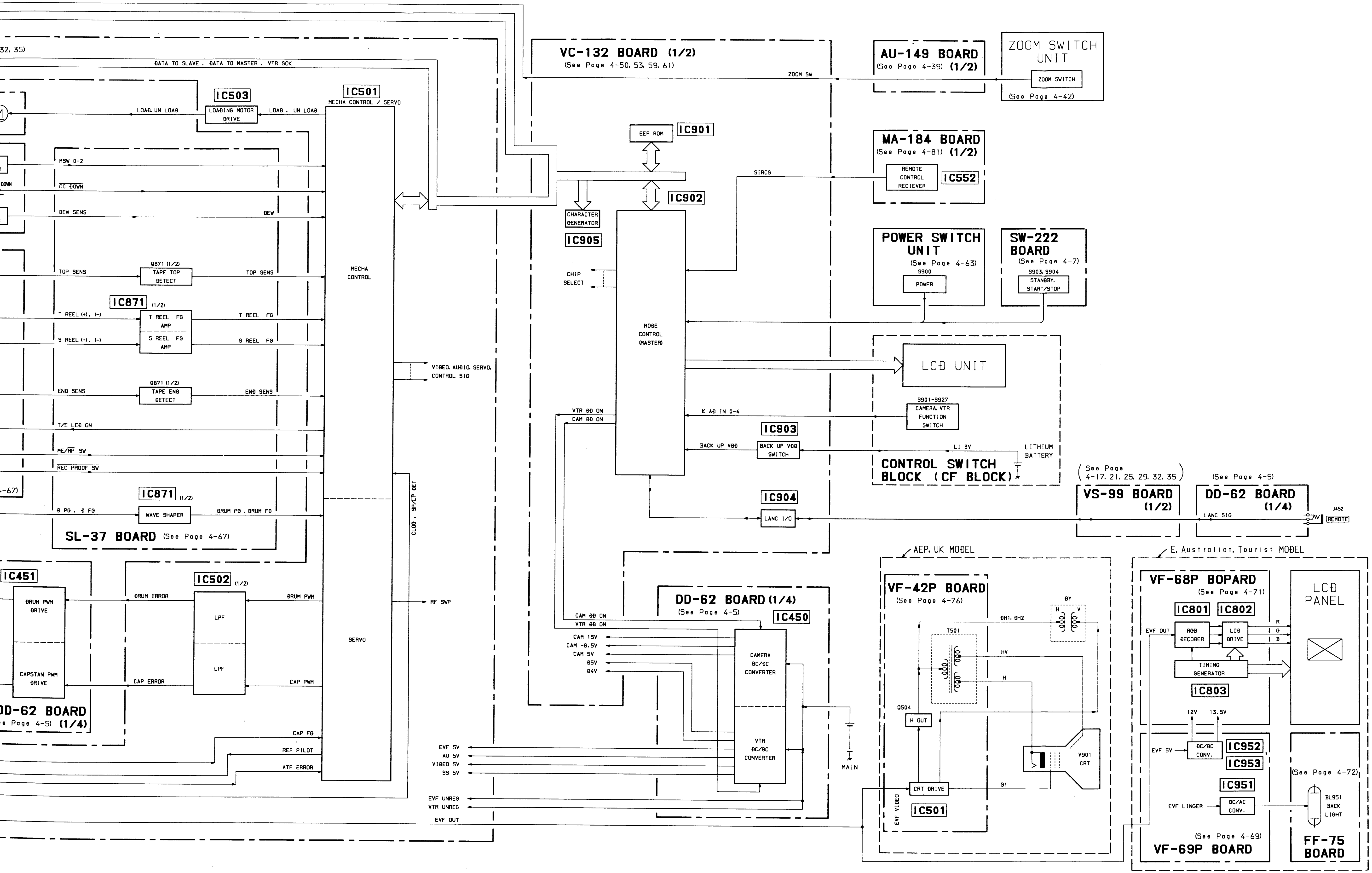

⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder LCD Drive)
VF-69P
(DC/AC Converter)
LM-40
(Loading Motor)

SECTION 3
DIAGRAMS

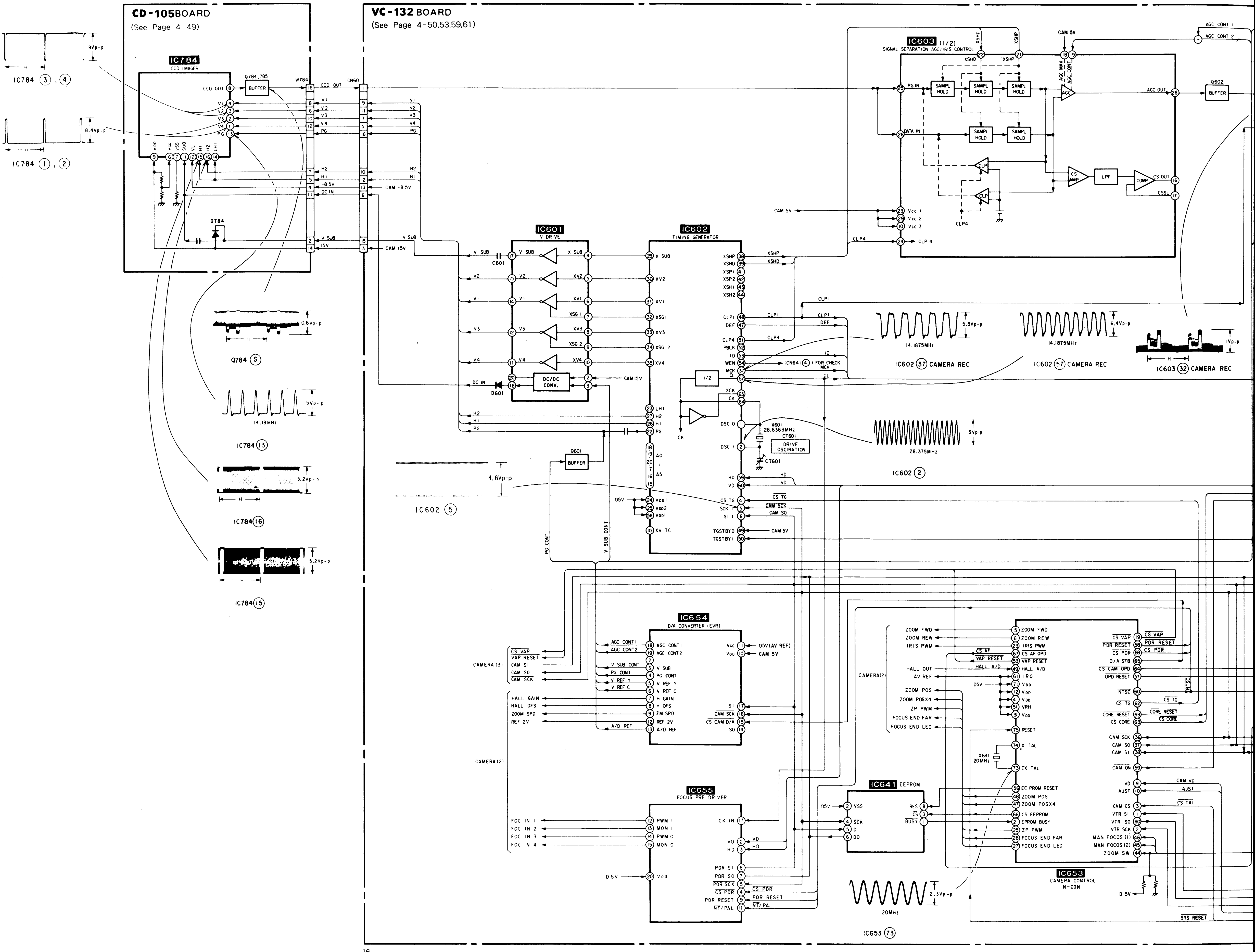
3-1. OVERALL BLOCK DIAGRAM

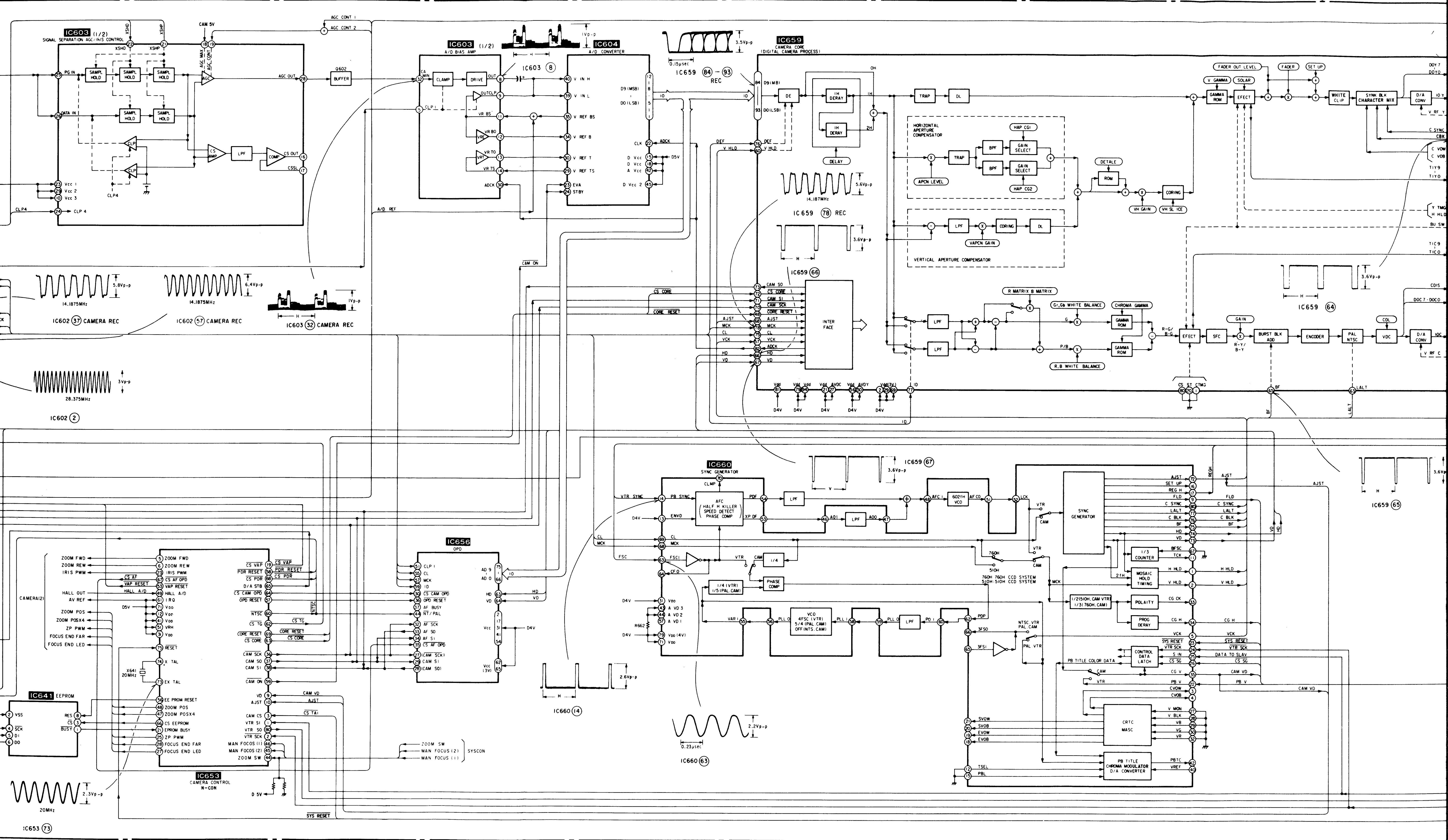

CD-105 BOARD
(See Page 4-49)
IC784
CCD IMAGER
CCD OUT
IC603
SIGNAL SEPARATION AGC
IC601
IC602
GY OUT
IC604
A/D CONV
10
D0-D9
IC659
CAMERA CORE
(DIGITAL CAMERA PROCESS)
V1-V4, V SUB
H1, H2, PG
V DRIVE
TIMING GENERATOR
IC654
ADJUST VOLTAGE
EVR
CAM SO , CAM SI , CAM SCK
IC653
CAMERA CONTROL
μ-CON
IC656
OPD
IC655
FOCUS PRE DRIVE
IC641
EEPROM
SYNC GENERATOR
IC660
VTR SO, VTR SI, VTR SCK
ZOOM SW
ZOOM LENS
M904
IRIS METER
M905
FOCUS MOTOR
ZOOM POSITION
HALL
H
M906
ZOOM MOTOR
M
MF-244 BOARD
(See Page 4-63)
S972
MANUAL FOCUS RING
CS BOARD
COIL
Y
P
Y DRIVE, Y DUMP
P DRIVE, P DUMP
VC-132 BOARD (1/2)
(See Page 4-50, 53, 59, 61)
FOCUS M A, B, A, B
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM M, T
IC711
IC714
IC715
ZOOM MOTOR DRIVE
ZOOM FWD, REV
IRIS DRIVE
HALL AMP
IRIS PWM
HALL OUT
MAN FOCUS 1, 2
IC712
ZOOM POSITION AMP
ZOOM POS, ZOOM POSX4
IC713
FOCUS MOTOR DRIVE
FOC IN 1, 2, 3, 4
IC740
IC743
VAP DRIVE
IC745
VAP CONTROL
IC744
A/D CONV
IC201
IC204
YS SENSOR
PS SENSOR
VAP SENSOR AMP
YP-13 BOARD
(See Page 4-57)
CAM SO , CAM SI , CAM SCK
MAN FOCUS 1, 2
VS-99 BOARD (1/2) (See Page
CAM Y
CAM C
LM-4
BOARD
(See Page 4-
FP-
BO
(See P
D001
T/E LED
ME
REC
LS-33 BO
JK-108 BOARD
(See Page 4-27)
S VIDEO OUT
S-Y OUT
S-C OUT
VIDEO OUT
RFU DC OUT
5V
AUDIO OUT
L
R
AUDIO OUT L
AUDIO OUT R
IC006
IC007
S VIDEO I/O
IC201
IC203
CAM Y
VIDEO
S REC Y
S PB Y
EVF OUT
Y PROCESS
IC101
IC102
PB RF PROCESS
HI8 DETECT
E/L DET
Y RF
PB RF
S REC C
S PB C
CAM C
C PROCESS
PB C RF
REC C RF
IC301
IC302
DATA TO SLAVE , DATA TO MASTER , VTR SCK
IC003
IC005
ADJUST VOLTAGE
D/A EVR
IC520
IC521
INDEX MARKER
IC001
REC PCM RF
PB PCM RF
REC/PB AMP
CH2
CH1
CH1
RF SWP
HC HG
FLYING ERASE OSC
FE
FLYING ERASE
CH2
CH1
CH1
MD A-MECHA
D PG , D FG
M901 DRUM MOTOR
DRUM PG, FG
M
IC502
DRUM MOTOR DRIVE
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
IC001
CFG (+), (-)
WAVE SHAPER
REC ATF
IC504
PB RF
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
CLOG , SP/LP DET
MA-184 BOARD
(See Page 4-81) (1/2)
IC551
L
LC
RC
R
MIC
STEREO MIC AMP
MIC L
MIC R
J551
MIC PLUG IN POWER
AU-149 BOARD (1/2)
(See Page 4-39)
IC801
AUDIO L, R
MIC L, R
HEADPHONE L, R
AFM AUDIO PROCESS
REC AFM RF
PB RF
DD-62 BOARD
(1/4)
J450
HEADPHONE L, R
(HEADPHONES)
16

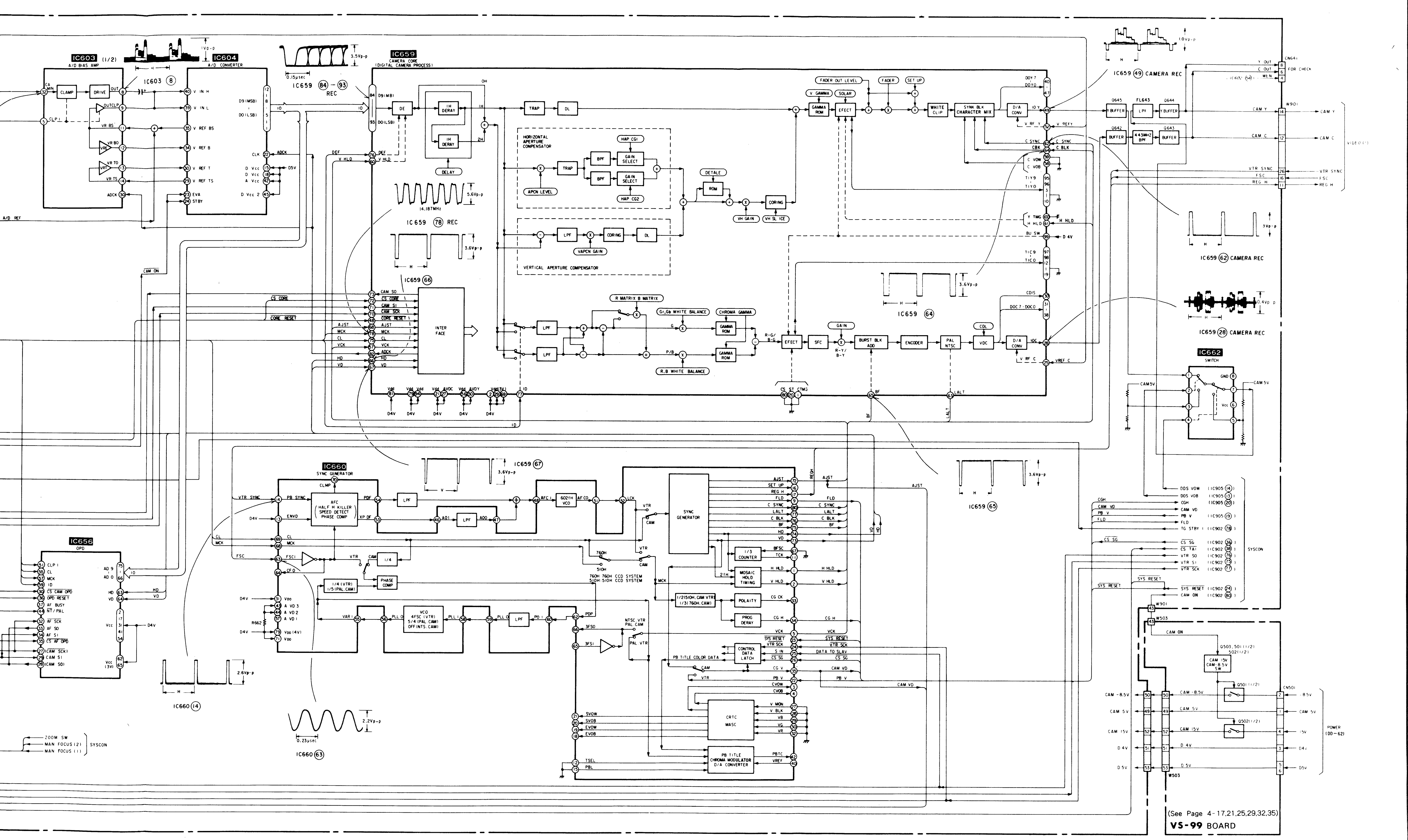

VS-99 BOARD (1/2) (See Page 4-17, 21, 25, 29, 32, 35)
IC659
CAMERA CORE
(DIGITAL CAMERA PROCESS)
SYNC GENERATOR
IC660
VTR SCK
ER, VTR SCK
ZOOM SW
CAM Y
CAM C
DATA TO SLAVE, DATA TO MASTER, VTR SCK
LM-40 BOARD
(See Page 4-67)
M903 LOADING MOTOR
M
LOAD, UN LOAD
IC503
LOADING MOTOR DRIVE
LOAD, UN LOAD
IC501
MECHA CONTROL / SERVO
FP-442 BOARD
(See Page 4-67)
S001 MODE SWITCH
S005 C.C. DOWN
DEW SENSOR
MSW 0-2
CC DOWN
DEW SENS
DEW
D001 T/E LED
TAPE TOP SENSOR
Q001
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
Q002
TAPE END SENSOR
TOP SENS
Q871 (1/2) TAPE TOP DETECT
TOP SENS
IC871 (1/2)
T REEL (+), (-)
T REEL FG AMP
T REEL FG
S REEL (+), (-)
S REEL FG AMP
S REEL FG
END SENS
Q871 (1/2) TAPE END DETECT
END SENS
T/E LED ON
S002
ME/MP
REC PROOF
ME/MP SW
REC PROOF SW
LS-33 BOARD (See Page 4-67)
IC871 (1/2)
D PG, D FG
WAVE SHAPER
DRUM PG, DRUM FG
SL-37 BOARD (See Page 4-67)
MECHA CONTROL
VIDEO, AUDIO, SERVO, CONTROL SIG
CLOG, SP/LP DET
SERVO
RF SWP
FLYING ERASE
CH2
CH1'
CH1
MD A-MECHA
M901 DRUM MOTOR
DRUM PG, FG
M
IC502 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC451
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DRUM ERROR
IC502 (1/2)
LPF
LPF
DRUM PWM
CAP PWM
CAP ERROR
M902 CAPSTAN MOTOR
CAPSTAN FG
M
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CFG (+), (-)
CAP VS
DD-62 BOARD (See Page 4-5) (1/4)
CAP FG
REF PILOT
ATF ERROR
VC-132 BOARD (1/2)
(See Page 4-50, 53, 59, 61)
ZOOM SW
EEP ROM
IC901
IC902
CHARACTER GENERATOR
IC905
CHIP SELECT
MODE CONTROL (MASTER)
SIRCS
VTR DD ON
CAM DD ON
K AD IN 0-4
IC903
BACK UP VDD
BACK UP VDD SWITCH
IC904
LANC I/O
AU-149 BOARD
(See Page 4-39) (1/2)
ZOOM
(See Pa
MA-184 BOARD
(See Page 4-81) (1/2)
REMOTE CONTROL RECIEVER
IC552
POWER SWITCH UNIT
(See Page 4-63)
S900
POWER
SW-2
BOAR
(See
S903
STA
START
LCD UNIT
S901-S927 CAMERA, VTR FUNCTION SWITCH
LI 3V
LITH BATT
CONTROL SWITCH BLOCK (CF BLOCK)
AEP, UK MODEL
DD-62 BOARD (1/4)
(See Page 4-5)
IC450
CAM DD ON
VTR DD ON
CAM 15V
CAM -8.5V
CAM 5V
D5V
D4V
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
EVF 5V
AU 5V
VIDEO 5V
SS 5V
EVF UNREG
VTR UNREG
EVF OUT
MAIN
VF-42P BOARD
(See Page 4-76)
DH1, DH2
T501
HV
H
Q504
H OUT
CRT DRIVE
G1
EVF VIDEO
IC501


32, 35)
DATA TO SLAVE , DATA TO MASTER , VTR SCK
IC503
LOADING MOTOR DRIVE
LOAD, UN LOAD
LOAD , UN LOAD
IC501
MECHA CONTROL / SERVO
MSW 0-2
CC DOWN
DEW SENS
DEW
TOP SENS
Q871 (1/2)
TAPE TOP DETECT
TOP SENS
IC871 (1/2)
T REEL (+), (-)
T REEL FG AMP
T REEL FG
S REEL (+), (-)
S REEL FG AMP
S REEL FG
END SENS
Q871 (1/2)
TAPE END DETECT
END SENS
T/E LED ON
ME/MP SW
REC PROOF SW
-67)
IC871 (1/2)
D PG , D FG
WAVE SHAPER
DRUM PG , DRUM FG
SL-37 BOARD (See Page 4-67)
MECHA CONTROL
VIDEO, AUDIO, SERVO, CONTROL SIG
CLOG , SP/LP DET
SERVO
RF SWP
IC451
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DD-62 BOARD
e Page 4-5) (1/4)
IC502 (1/2)
DRUM ERROR
LPF
DRUM PWM
CAP ERROR
LPF
CAP PWM
CAP FG
REF PILOT
ATF ERROR
EVF 5V
AU 5V
VIDEO 5V
SS 5V
EVF UNREG
VTR UNREG
EVF OUT
VC-132 BOARD (1/2)
(See Page 4-50, 53, 59, 61)
ZOOM SW
EEP ROM
IC901
IC902
CHARACTER GENERATOR
IC905
CHIP SELECT
MODE CONTROL (MASTER)
SIRCS
VTR DD ON
CAM DD ON
K AD IN 0-4
IC903
BACK UP VDD
BACK UP VDD SWITCH
IC904
LANC I/O
CAM DD ON
VTR DD ON
DD-62 BOARD (1/4)
(See Page 4-5)
IC450
CAM 15V
CAM -8.5V
CAM 5V
D5V
D4V
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
MAIN
AU-149 BOARD
(See Page 4-39) (1/2)
ZOOM SWITCH UNIT
ZOOM SWITCH
(See Page 4-42)
MA-184 BOARD
(See Page 4-81) (1/2)
REMOTE CONTROL RECIEVER
IC552
POWER SWITCH UNIT
(See Page 4-63)
S900
POWER
SW-222 BOARD
(See Page 4-7)
S903, S904
STANDBY, START/STOP
LCD UNIT
S901-S927
CAMERA, VTR FUNCTION SWITCH
LI 3V
LITHIUM BATTERY
CONTROL SWITCH BLOCK (CF BLOCK)
(See Page 4-17, 21, 25, 29, 32, 35)
VS-99 BOARD (1/2)
(See Page 4-5)
DD-62 BOARD (1/4)
LANC SIG
J452
REMOTE
AEP, UK MODEL
VF-42P BOARD
(See Page 4-76)
DY
DH1, DH2
T501
HV
H
Q504
H OUT
V901 CRT
G1
CRT DRIVE
EVF VIDEO
IC501
E, Australian, Tourist MODEL
VF-68P BOPARD
(See Page 4-71)
IC801
IC802
EVF OUT
RGB DECODER
LCD DRIVE
R
G
B
TIMING GENERATOR
IC803
LCD PANEL
12V
13.5V
EVF 5V
DC/DC CONV.
IC952
IC953
IC951
EVF LINGER
DC/AC CONV.
(See Page 4-69)
VF-69P BOARD
(See Page 4-72)
BL951 BACK LIGHT
FF-75 BOARD

3-2. CAMERA (1) BLOCK DIAGRAM

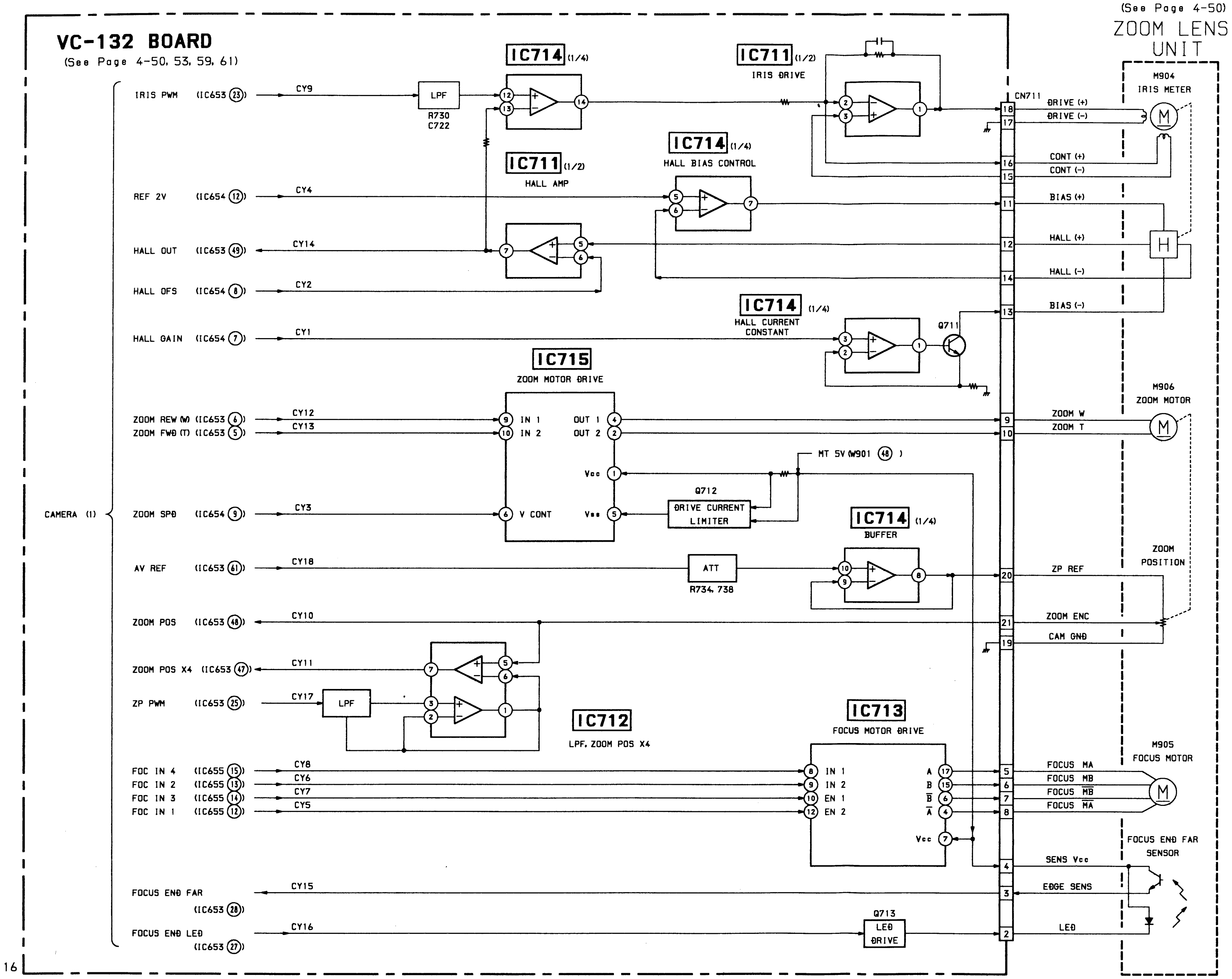

CD-105 BOARD
(See Page 4-49)
IC784
CCD IMAGER
CCD OUT
BUFFER
Q784,785
W784
VC-132 BOARD
(See Page 4-50,53,59,61)
CN601
IC784 ③,④
8Vp-p
IC784 ①,②
8.4Vp-p
D784
V SUB
CAM 15V
CAM -8.5V
DC IN
IC603 (1/2)
SIGNAL SEPARATION AGC/IRIS CONTROL
SAMPL HOLD
AGC
AGC OUT
Q602
BUFFER
CS AMP
LPF
COMP
CS OUT
CSSL
CLP
CLP4
CAM 5V
AGC CONT 1
AGC CONT 2
IC601
V DRIVE
C601
DC/DC CONV.
D601
CAM15V
IC602
TIMING GENERATOR
X601
28.6363MHz
CT601
DRIVE OSCIRATION
Q601
BUFFER
PG CONT
V SUB CONT
Q784 ⑤
0.8Vp-p
IC784 ⑬
5Vp-p
14.18MHz
IC784 ⑯
5.2Vp-p
IC784 ⑮
5.2Vp-p
IC602 ⑤
4.6Vp-p
IC602 ㊲ CAMERA REC
5.8Vp-p
14.1875MHz
IC602 (57) CAMERA REC
6.4Vp-p
14.1875MHz
IC603 ㉜ CAMERA REC
1Vp-p
IC602 ②
3Vp-p
28.375MHz
ICN641 ④ I FOR CHECK
IC654
D/A CONVERTER (EVR)
D5V (AV REF)
CAM 5V
CAMERA (3)
CAMERA (2)
IC655
FOCUS PRE DRIVER
FOC IN 1
FOC IN 2
FOC IN 3
FOC IN 4
D 5V
IC641 EEPROM
IC653
CAMERA CONTROL
N-CON
X641
20MHz
IC653 ㊸
2.3Vp-p
20MHz
SYS RESET


IC603 (1/2)
SIGNAL SEPARATION AGC/IRIS CONTROL
SAMPL HOLD
AGC
CS AMP
LPF
COMP
CS OUT
CSSL
PG IN
DATA IN
Vcc 1
Vcc 2
Vcc 3
CLP 4
CLP4
AGC OUT
Q602
BUFFER
AGC CONT 1
AGC CONT 2
CAM 5V
XSHD
XSHP
IC603 (1/2)
A/D BIAS AMP
CLAMP
DRIVE
OUTCLP
VR BS
VR BO
VR TO
VR TS
ADCK
IC603 ⑧
IC604
A/D CONVERTER
V IN H
V IN L
V REF BS
V REF B
V REF T
V REF TS
EVA
STBY
D9 (MSB)
D0 (LSB)
CLK
D Vcc
A Vcc
D Vcc 2
D5V
A/D REF
CAM ON
1VD-p
1Vp-p
0.15μsec
3.5Vp-p
IC659 (84) – (93) REC
IC659
CAMERA CORE (DIGITAL CAMERA PROCESS)
DE
1H DERAY
DELAY
TRAP
DL
HORIZONTAL APERTURE COMPENSATOR
APCN LEVEL
BPF
GAIN SELECT
HAP CG1
HAP CG2
DETALE
ROM
VH GAIN
VH SL ICE
CORING
LPF
VAPCN GAIN
VERTICAL APERTURE COMPENSATOR
FADER OUT LEVEL
FADER
SET UP
V GAMMA
SOLAR
GAMMA ROM
EFECT
WHITE CLIP
SYNK BLK CHARACTER MIX
D/A CONV
R MATRIX B MATRIX
Gr, Gb WHITE BALANCE
CHROMA GAMMA
R, B WHITE BALANCE
GAMMA ROM
SFC
GAIN
BURST BLK ADD
ENCODER
PAL NTSC
CDL
VDC
CS ST CTMG
BF
LALT
ID
INTER FACE
CAM SO
CS CORE
CAM SI
CAM SCK
CORE RESET
AJST
MCK
CL
VCK
HD
VD
DEF
V HLD
5.6Vp-p
14.187MHz
IC659 (78) REC
3.6Vp-p
IC659 (66)
IC659 (64)
IC659 (65)
IC659 (67)
5.8Vp-p
14.1875MHz
IC602 (37) CAMERA REC
6.4Vp-p
IC602 (57) CAMERA REC
IC603 (32) CAMERA REC
3Vp-p
28.375MHz
IC602 ②
IC660
SYNC GENERATOR
AFC HALF H KILLER SPEED DETECT PHASE COMP
VTR SYNC
ENVD
CLMP
PB SYNC
PDF
XP DF
AOI
AOO
AFC I
AFC O
602fH VCO
LCK
SYNC GENERATOR
FSC
FSCI
CFO
1/4
PHASE COMP
1/4 (VTR) 1/5 (PAL CAM)
760H CCD SYSTEM
510H CCD SYSTEM
1/3 COUNTER
MOSAIC HOLD TIMING
1/2 (510H.CAM VTR) 1/3 (760H.CAM)
POLAITY
PROG DERAY
CONTROL DATA LATCH
CRTC MASC
PB TITLE CHROMA MODULATOR D/A CONVERTER
VCO 4FSC (VTR) 5/4 (PAL CAM) OFF (INTS.CAM)
VAR I
PLL O
PLL I
PO I
PDP
3FSO
3FSI
NTSC VTR PAL CAM
PAL VTR
R662
D4V
SET UP
REG H
FLD
C SYNC
C BLK
TCK
BFSC
H HLD
CG CK
CG H
SYS RESET
VTR SCK
S IN
CS SG
DATA TO SLAV
PB TITLE COLOR DATA
CG V
PB V
CVOW
CVOB
V MON
V BLK
VB
VG
VR
SVOW
SVOB
EVOW
EVOB
TSEL
PBL
PBTC
VREF
CAM VD
3.6Vp-p
2.6Vp-p
IC660 (14)
2.2Vp-p
0.23μsec
IC660 (63)
IC656
OPD
CLP I
AF BUSY
NT/PAL
AF SCK
AF SO
AF SI
CS AF OPD
CAM SCK
CAM SO
CAM SI
IC653
CAMERA CONTROL M-CON
ZOOM FWD
ZOOM REW
IRIS PWM
CS AF
VAP RESET
HALL OUT
HALL A/D
AV REF
ZOOM POS
ZOOM POSX4
ZP PWM
FOCUS END FAR
FOCUS END LED
CAMERA(2)
CS VAP
PDR RESET
CS PDR
D/A STB
CS CAM OPD
OPD RESET
NTSC
CS TG
CORE RESET
CS CORE
CAM ON
CAM CS
VTR SI
VTR SO
VTR SCK
MAN FOCOS (1)
MAN FOCOS (2)
ZOOM SW
SYSCON
X641 20MHz
X TAL
EX TAL
RESET
EE PROM RESET
CS EEPROM
EPROM BUSY
IC641 EEPROM
VSS
SCK
DI
DO
RES
CS
BUSY
2.3Vp-p
20MHz
IC653 (73)
D 5V
SYS RESET

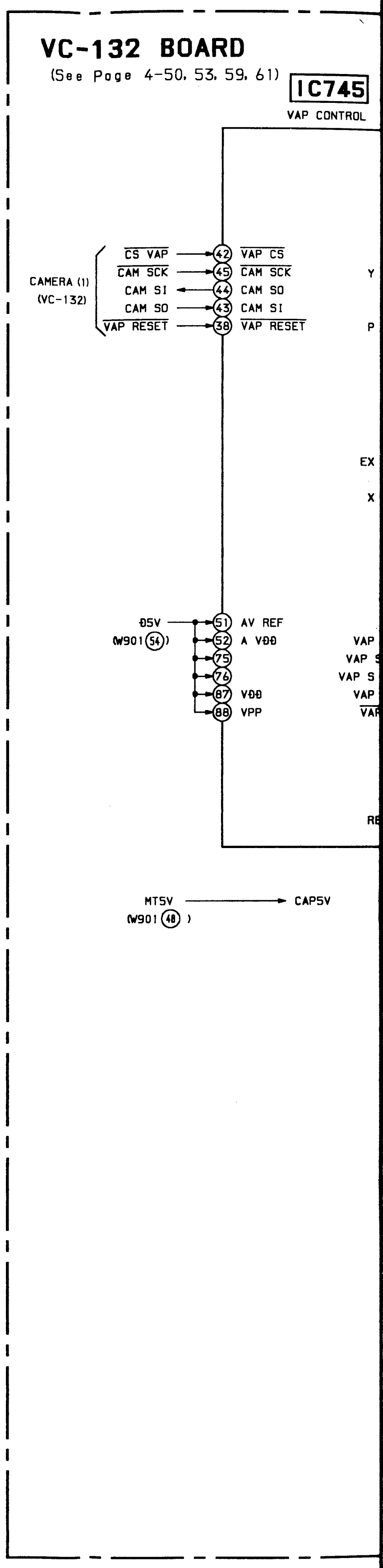

IC603 (1/2)
A/D BIAS AMP
CLAMP
DRIVE
IC604
A/D CONVERTER
V IN H
V IN L
V REF BS
V REF B
V REF T
V REF TS
EVA
STBY
D9(MSB)
D0(LSB)
CLK
D Vcc
A Vcc
D Vcc 2
ADCK
D5V
A/D REF
IC603 (8)
IC659
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC659 (84)-(93) REC
3.5Vp-p
0.15μsec
DE
1H DERAY
DELAY
TRAP
DL
HORIZONTAL APERTURE COMPENSATOR
HAP CG1
HAP CG2
BPF
GAIN SELECT
APCN LEVEL
DETALE
ROM
CORING
VH GAIN
VH SL ICE
LPF
VAPCN GAIN
VERTICAL APERTURE COMPENSATOR
FADER OUT LEVEL
FADER
SET UP
V GAMMA
SOLAR
GAMMA ROM
EFECT
WHITE CLIP
SYNK BLK CHARACTER MIX
D/A CONV
V RF Y
V REFY
C SYNC
C BLK
CBK
C VOW
C VOB
TIY9
TIY0
Y TMG
H HLD
BU SW
D 4V
TIC9
TIC0
CDIS
DOC7-DOC0
R MATRIX B MATRIX
Gr,Gb WHITE BALANCE
CHROMA GAMMA
R,B WHITE BALANCE
R-G/B-G
SFC
GAIN
R-Y/B-Y
BURST BLK ADD
ENCODER
PAL NTSC
CDL
VDC
V RF C
VREF C
CS ST CTMG
BF
LALT
IC659 (78) REC
5.6Vp-p
14.187MHz
3.6Vp-p
IC659 (66)
INTER FACE
CAM SO
CS CORE
CAM SI
CAM SCK
CORE RESET
AJST
MCK
CL
VCK
ADCK
HD
VD
Vdd
AVDC
AVDY
Vdd(3V)
ID
D4V
CAM ON
IC659 (49) CAMERA REC
1.0Vp-p
Q645 BUFFER
FL643 LPF
Q644 Y BUFFER
Q642 BUFFER
4.43MHz BPF
Q643 BUFFER
Y OUT
C OUT
WEN
CN641 FOR CHECK
W901
CAM Y
CAM C
VTR SYNC
FSC
REG H
VIDEO (1)
IC659 (62) CAMERA REC
IC659 (64)
IC659 (28) CAMERA REC
0.4Vp-p
IC662 SWITCH
CAM5V
GND
Vcc
IC660
SYNC GENERATOR
AFC (HALF H KILLER SPEED DETECT PHASE COMP)
PB SYNC
ENVD
PDF
XP DF
CLMP
AFC
AO1
AO0
6021H VCO
AF CO
LCK
FSCI
CFO
1/4
VTR
CAM
PHASE COMP
1/4(VTR) 1/5(PAL CAM)
760H
510H
760H 760H CCD SYSTEM
510H 510H CCD SYSTEM
VAR I
PLL O
VCO 4FSC(VTR) 5/4(PAL CAM) OFF(NTS CAM)
PLL I
PO
PDP
3FSO
3FSI
NTSC VTR PAL CAM
PAL VTR
Vdo
A VD 3
A VD 2
A VD 1
Vdo(4V)
R662
IC659 (67)
SYNC GENERATOR
1/3 COUNTER
BFSC
TCK
MOSAIC HOLD TIMING
1/2(510H,CAM VTR) 1/3(760H,CAM)
POLAITY
PROG DERAY
CG CK
CG H
CONTROL DATA LATCH
PB TITLE COLOR DATA
SYS RESET
VTR SCK
S IN
CS SG
CG V
PB V
CVOW
CVOB
CRTC MASC
V MON
V BLK
VB
VG
VR
SVOW
SVOB
EVOW
EVOB
PB TITLE CHROMA MODULATOR D/A CONVERTER
PBTC
VREF
TSEL
PBL
SET UP
REG H
FLD
C SYNC
LALT
C BLK
AJST
DATA TO SLAV
CAM VD
IC659 (65)
DDS VOW (IC905 (4))
DDS VOB (IC905 (3))
CGH (IC905 (20))
CAM VD
PB V (IC905 (9))
FLD
TG STBY (IC902 (78))
CS SG (IC902 (36))
CS TAI (IC902 (38))
VTR SO (IC902 (76))
VTR SI (IC902 (75))
VTR SCK (IC902 (77))
SYSCON
SYS RESET (IC902 (24))
CAM ON (IC902 (80))
W503
Q503,501(1/2) 502(1/2)
CAM 15V CAM-8.5V SW
Q501(1/2)
Q502(1/2)
CN501
CAM -8.5V
CAM 5V
CAM 15V
D 4V
D 5V
POWER (DD-62)
IC656
OPD
CLP I
CL
MCK
ID
CS CAM OPD
OPD RESET
AF BUSY
NT/PAL
AF SCK
AF SO
AF SI
CS AF OPD
ICAM SCK
CAM SI
ICAM SO
AD 9
AD 0
Vcc
Vcc (3V)
IC660 (14)
2.6Vp-p
IC660 (63)
2.2Vp-p
0.23μsec
ZOOM SW
MAN FOCUS (2)
MAN FOCUS (1)
SYSCON

(See Page 4-17,21,25,29,32,35)
VS-99 BOARD

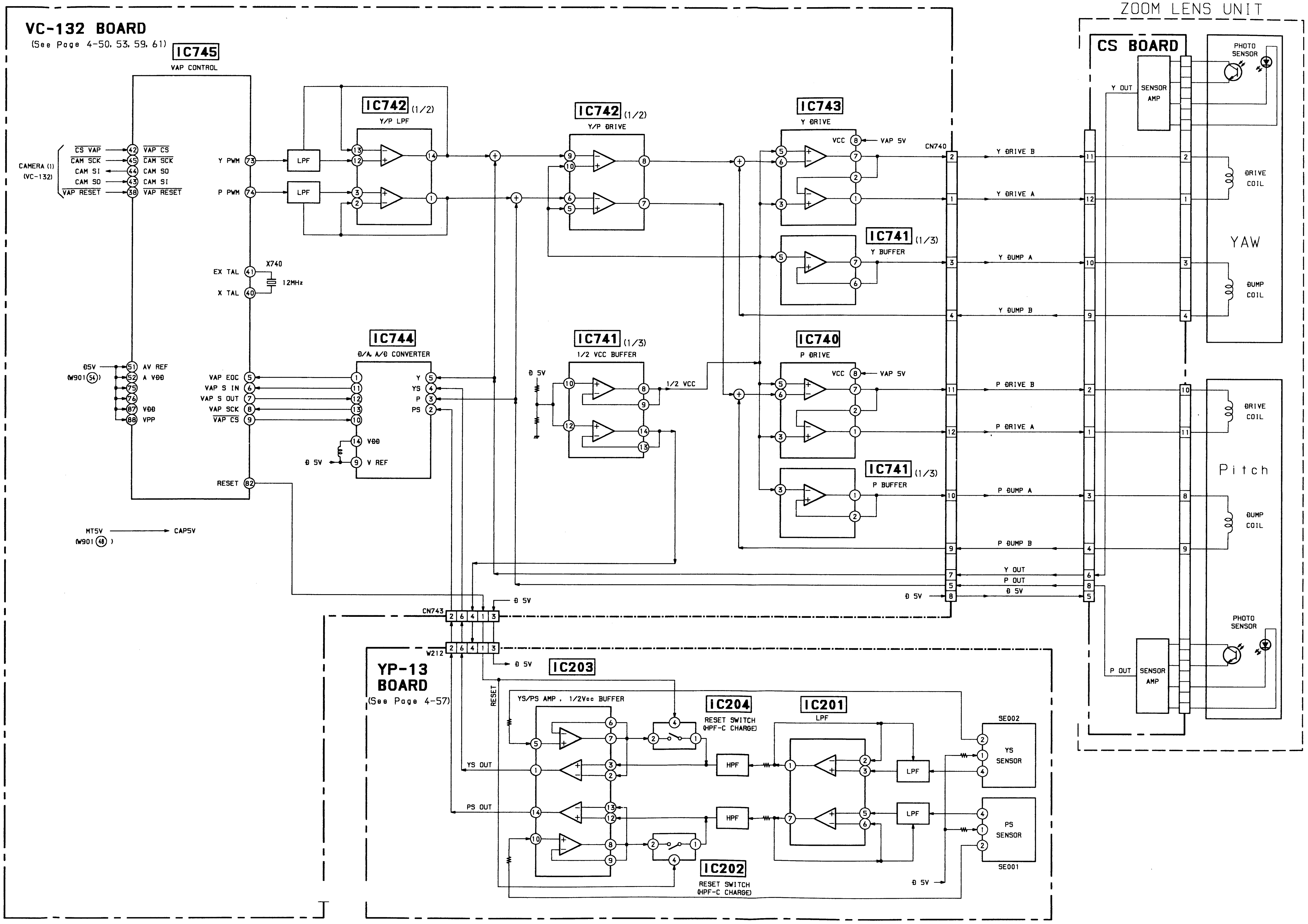
3-3. CAMERA (2) BLOCK DIAGRAM


VC-132 BOARD
(See Page 4-50, 53, 59, 61)
(See Page 4-50)
ZOOM LENS UNIT
CAMERA (1)
IRIS PWM (IC653 ㉓)
REF 2V (IC654 ⑫)
HALL OUT (IC653 ㊾)
HALL OFS (IC654 ⑧)
HALL GAIN (IC654 ⑦)
ZOOM REW (W) (IC653 ⑥)
ZOOM FWD (T) (IC653 ⑤)
ZOOM SPD (IC654 ⑨)
AV REF (IC653 ㊶)
ZOOM POS (IC653 ㊽)
ZOOM POS X4 (IC653 ㊼)
ZP PWM (IC653 ㉕)
FOC IN 4 (IC655 ⑮)
FOC IN 2 (IC655 ⑬)
FOC IN 3 (IC655 ⑭)
FOC IN 1 (IC655 ⑫)
FOCUS END FAR (IC653 ㉘)
FOCUS END LED (IC653 ㉗)
CY9
CY4
CY14
CY2
CY1
CY12
CY13
CY3
CY18
CY10
CY11
CY17
CY8
CY6
CY7
CY5
CY15
CY16
LPF
R730
C722
IC714 (1/4)
IC711 (1/2)
HALL AMP
IC711 (1/2)
IRIS DRIVE
IC714 (1/4)
HALL BIAS CONTROL
IC714 (1/4)
HALL CURRENT CONSTANT
Q711
IC715
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
MT 5V (W901 ㊽)
Q712
DRIVE CURRENT LIMITER
IC714 (1/4)
BUFFER
ATT
R734, 738
IC712
LPF, ZOOM POS X4
LPF
IC713
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
Vcc
Q713
LED DRIVE
CN711
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
BIAS (+)
HALL (+)
HALL (-)
BIAS (-)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
CAM GND
FOCUS MA
FOCUS MB
FOCUS M̄B̄
FOCUS M̄Ā
SENS Vcc
EDGE SENS
LED
M904
IRIS METER
H
M906
ZOOM MOTOR
ZOOM POSITION
M905
FOCUS MOTOR
FOCUS END FAR SENSOR
16

3-4. CAMERA (3) BLOCK DIAGRAM


VC-132 BOARD
(See Page 4-50, 53, 59, 61)
IC745
VAP CONTROL
CAMERA (1) (VC-132)
CS VAP
CAM SCK
CAM SI
CAM SO
VAP RESET
VAP CS
VAP SCK
CAM SO
CAM SI
VAP RESET
DSV (W901 ㊿)
AV REF
A VDD
VDD
VPP
MT5V (W901 ㊽)
CAP5V
16

3-4. CAMERA (3) BLOCK DIAGRAM


VC-132 BOARD
(See Page 4-50, 53, 59, 61)
IC745
VAP CONTROL
CAMERA (1) (VC-132)
CS VAP
CAM SCK
CAM SI
CAM SO
VAP RESET
VAP CS
CAM SCK
CAM SO
CAM SI
VAP RESET
Y PWM
P PWM
LPF
IC742 (1/2)
Y/P LPF
IC742 (1/2)
Y/P DRIVE
IC743
Y DRIVE
VCC
VAP 5V
CN740
IC741 (1/3)
Y BUFFER
EX TAL
X TAL
X740
12MHz
IC744
D/A, A/D CONVERTER
IC741 (1/3)
1/2 VCC BUFFER
1/2 VCC
IC740
P DRIVE
IC741 (1/3)
P BUFFER
D5V
(W901 (54))
AV REF
A VDD
VDD
VPP
VAP EOC
VAP S IN
VAP S OUT
VAP SCK
VAP CS
Y
YS
P
PS
VDD
V REF
RESET
MT5V
(W901 (48))
CAP5V
Y DRIVE B
Y DRIVE A
Y DUMP A
Y DUMP B
P DRIVE B
P DRIVE A
P DUMP A
P DUMP B
Y OUT
P OUT
D 5V
CN743
W212
YP-13 BOARD
(See Page 4-57)
IC203
RESET
YS/PS AMP . 1/2Vcc BUFFER
IC204
RESET SWITCH (HPF-C CHARGE)
IC201
LPF
HPF
YS OUT
PS OUT
IC202
RESET SWITCH (HPF-C CHARGE)
SE002
YS SENSOR
PS SENSOR
SE001
ZOOM LENS UNIT
CS BOARD
PHOTO SENSOR
SENSOR AMP
DRIVE COIL
YAW
DUMP COIL
Pitch
P OUT

[Outline of Anti Shake Corre

- Because the anti shake correc Pitch block is described.

1. Angular velocity detection ci

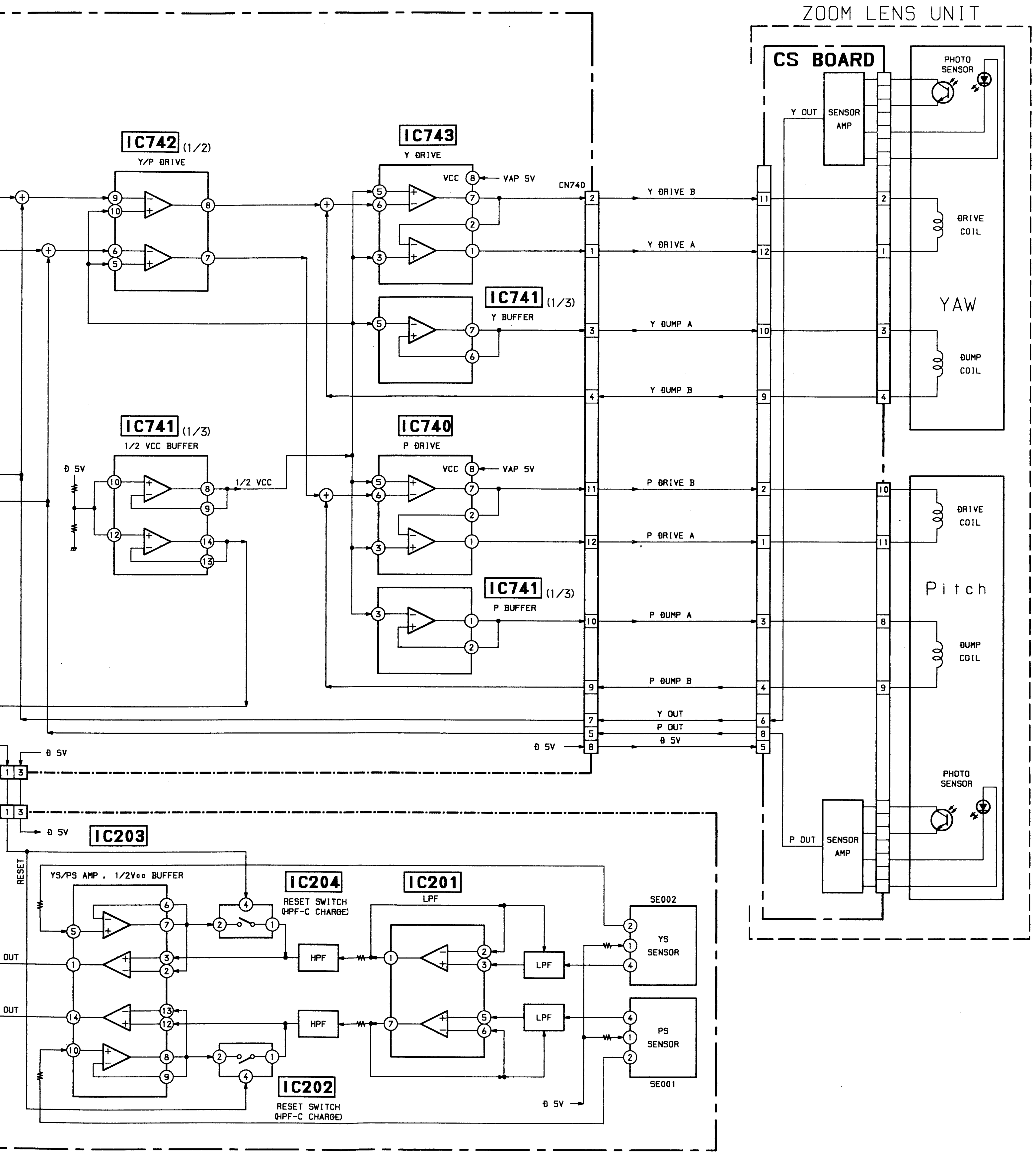
- The signal output from senso included in the output signal. been chosen to prevent interfe dc voltage in the angular veloc and then output to the A/D The IC202 (switch) and IC203 is turned on.

2. VAP control(VC-132 board)

- The angular velocity is conve microprocessor) in the form angular data by the integrato the rotating angle of the pris

3. Prism drive circuit(VC-132 bo

- The active prism is driven by When the prism is rotated, its position data) signal. This sig IC742 (error signal amplifier), prism is detected by the dum data is output as the P DUM to stabilize the prism drive.


ZOOM LENS UNIT
CS BOARD
IC742 (1/2)
Y/P DRIVE
IC743
Y DRIVE
VCC
VAP 5V
CN740
IC741 (1/3)
Y BUFFER
IC741 (1/3)
1/2 VCC BUFFER
1/2 VCC
IC740
P DRIVE
IC741 (1/3)
P BUFFER
Y DRIVE B
Y DRIVE A
Y DUMP A
Y DUMP B
P DRIVE B
P DRIVE A
P DUMP A
P DUMP B
Y OUT
P OUT
0 5V
SENSOR AMP
PHOTO SENSOR
DRIVE COIL
DUMP COIL
YAW
Pitch
IC203
YS/PS AMP , 1/2Vcc BUFFER
RESET
OUT
IC204
RESET SWITCH (HPF-C CHARGE)
IC201
LPF
HPF
SE002
YS SENSOR
PS SENSOR
SE001
IC202
RESET SWITCH (HPF-C CHARGE)

[Outline of Anti Shake Correction Circuit]

- Because the anti shake correction circuits in the Yaw block and the Pitch block are identical, only the circuit in the Pitch block is described.

1. Angular velocity detection circuit(YP-13 board)

- The signal output from sensor SE001 (Pitch) is input to the low-pass filter to remove the 25 kHz carrier component included in the output signal. (The signal output from sensor SE002 (Yaw) has a 26 kHz carrier. (This frequency has been chosen to prevent interference.) The signal is then sent to the high-pass filter to remove the dc drift (because the dc voltage in the angular velocity sensor output changes with temperature). The signal is amplified by IC203 (PS amplifier) and then output to the A/D converter (IC744).

  The IC202 (switch) and IC203 (1/2 Vcc buffer) stabilize the picture in the center of the screen quickly when the power is turned on.

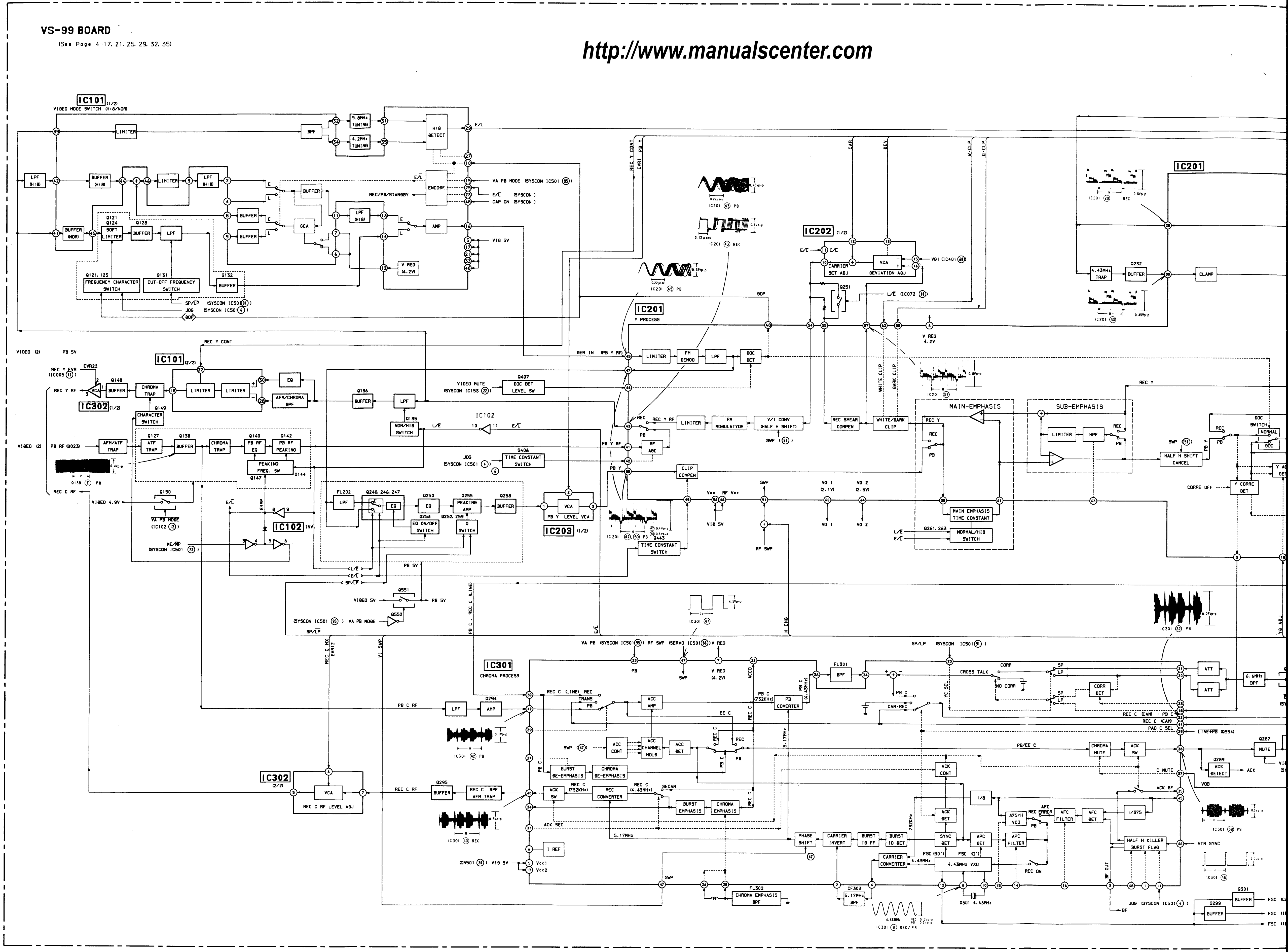
2. VAP control(VC-132 board)

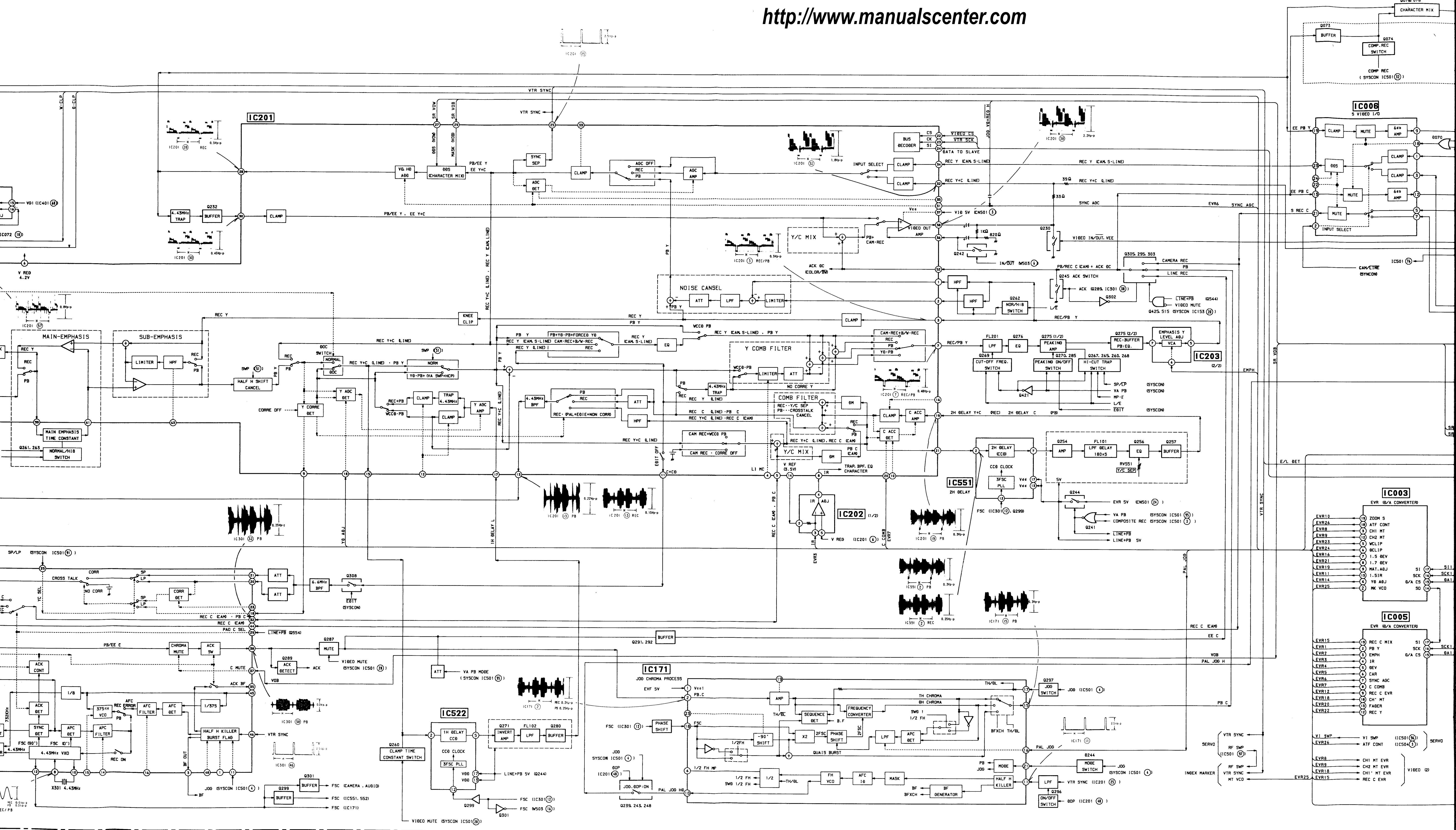
- The angular velocity is converted to a digital signal by IC744 (A/D converter) and then input to IC745 (VAP control microprocessor) in the form of serial data communication. The microprocessor converts the angular velocity data to angular data by the integrator circuit to discriminate camera-shake from intentional panning and tilting, and calculates the rotating angle of the prism.

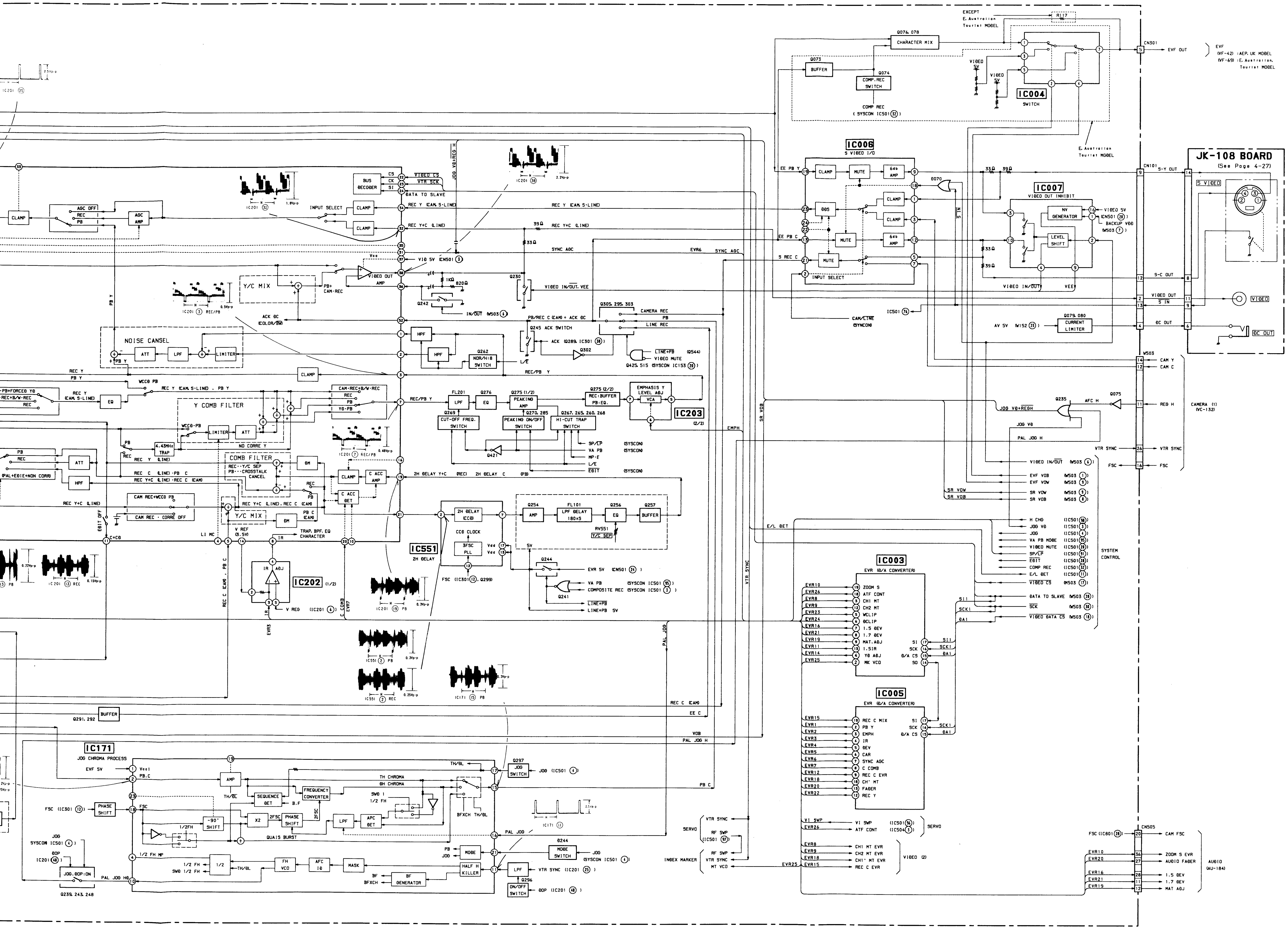
3. Prism drive circuit(VC-132 board)

- The active prism is driven by IC740 (differential drive). When an electric current flows in the drive coil, the prism rotates.) When the prism is rotated, its position data is detected by the vertical angle sensor, and is output as the P OUT (prism position data) signal. This signal is compared with the P PWM (correction output data) of the VAP microprocessor at IC742 (error signal amplifier), and then output to IC740 (differential drive). At the same time, the rotating speed of the prism is detected by the dumping coil which is pasted mechanically to the prism drive coil. The prism rotating speed data is output as the P DUMP B (prism velocity signal). This signal is fed back to the IC740 differential driver input to stabilize the prism drive.

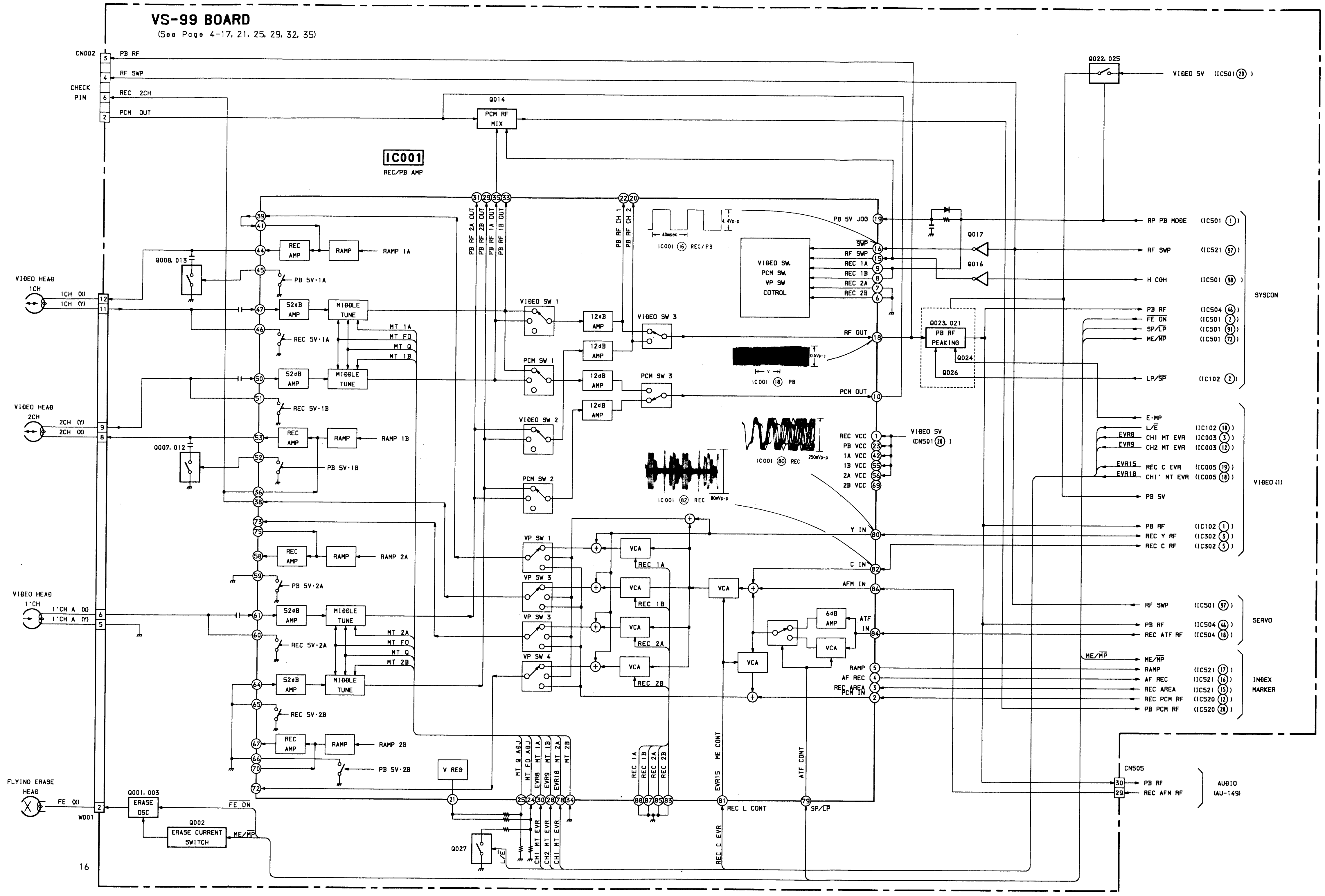
3-5. VIDEO (1) BLOCK DIAGRAM


VS-99 BOARD
(See Page 4-17, 21, 25, 29, 32, 35)
IC101 (1/2)
VIDEO MODE SWITCH (Hi8/NOR)
LIMITER
BPF
9.8MHz TUNING
4.2MHz TUNING
Hi8 DETECT
LPF (Hi8)
BUFFER (Hi8)
BUFFER (NOR)
SOFT LIMITER
BUFFER
LPF
ENCODE
GCA
AMP
V REG (4.2V)
VIO 5V
VA PB MODE (SYSCON IC501 (55))
E/L (SYSCON)
CAP ON (SYSCON)
REC/PB/STANDBY
FREQUENCY CHARACTER SWITCH
CUT-OFF FREQUENCY SWITCH
SP/LP (SYSCON IC501 (91))
JOG (SYSCON IC501 (4))
IC101 (2/2)
REC Y CONT
LIMITER
EQ
AFM/CHROMA BPF
CHROMA TRAP
CHARACTER SWITCH
IC302 (1/2)
VCA
REC Y RF
VIDEO (2)
PB RF (Q023)
AFM/ATF TRAP
ATF TRAP
CHROMA TRAP
PB RF EQ
PB RF PEAKING
PEAKING FREQ. SW
NOR/Hi8 SWITCH
IC102
VA PB MODE (IC102 (2))
IC102 INV
ME/MP (SYSCON IC501 (72))
FL202
LPF
EQ
PEAKING AMP
EQ ON/OFF SWITCH
Q SWITCH
BUFFER
VIDEO 5V
PB 5V
VIDEO MUTE (SYSCON IC153 (32))
DOC DET LEVEL SW
TIME CONSTANT SWITCH
IC203 (1/2)
PB Y LEVEL VCA
IC201
Y PROCESS
DEM IN (PB Y RF)
LIMITER
FM DEMOD
DOC DET
RF AGC
FM MODULATOR
V/I CONV (HALF H SHIFT)
CLIP COMPEN
REC SMEAR COMPEN
WHITE/DARK CLIP
MAIN-EMPHASIS
SUB-EMPHASIS
MAIN EMPHASIS TIME CONSTANT
NORMAL/Hi8 SWITCH
HPF
HALF H SHIFT CANCEL
Y CORRE DET
IC202 (1/2)
CARRIER SET ADJ
VCA
DEVIATION ADJ
4.43MHz TRAP
BUFFER
CLAMP
V REG 4.2V
IC301
CHROMA PROCESS
LPF
AMP
REC C (LINE)
ACC AMP
ACC CONT
ACC CHANNEL HOLD
ACC DET
PB CONVERTER
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
ACK SW
REC CONVERTER
SECAM
BURST EMPHASIS
CHROMA EMPHASIS
IC302 (2/2)
REC C RF LEVEL ADJ
REC C BPF AFM TRAP
1 REF
FL301
BPF
CROSS TALK
CORR DET
ATT
6.6MHz BPF
CHROMA MUTE
ACK SW
ACK CONT
ACK DET
1/8
375fH VCO
AFC FILTER
AFC DET
1/375
PHASE SHIFT
CARRIER INVERT
BURST ID FF
BURST ID DET
SYNC DET
APC DET
APC FILTER
CARRIER CONVERTER
4.43MHz VXO
HALF H KILLER BURST FLAG
FL302
CHROMA EMPHASIS BPF
CF303
5.17MHz BPF
X301 4.43MHz
MUTE
ACK DETECT
Q299 BUFFER
Q301 BUFFER
VTR SYNC
FSC

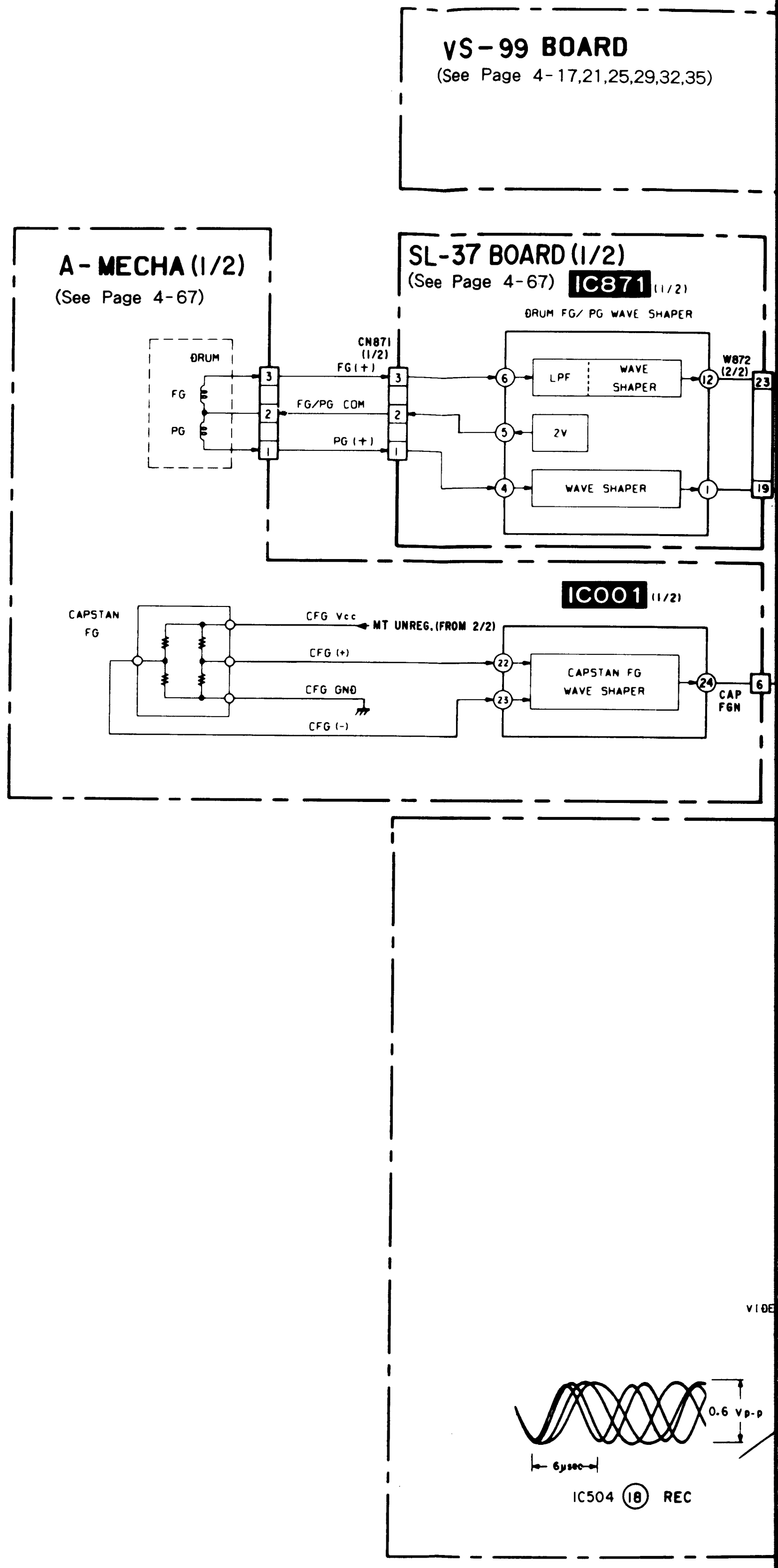

IC201
IC202
IC203
IC551
IC171
IC522
IC003
IC005
IC006
MAIN-EMPHASIS
SUB-EMPHASIS
MAIN EMPHASIS TIME CONSTANT
NORMAL/HI8 SWITCH
HALF H SHIFT CANCEL
LIMITER
HPF
LPF
ATT
CLAMP
NOISE CANSEL
Y COMB FILTER
COMB FILTER
Y/C MIX
Y CORRE DET
Y AGC DET
Y AGC AMP
4.43MHz TRAP
4.43MHz BPF
BUFFER
SYNC SEP
AGC DET
AGC AMP
AGC OFF
VD, HD AGC
OSD (CHARACTER MIX)
BUS DECODER
INPUT SELECT
VIDEO OUT AMP
KNEE CLIP
EQ
DATA TO SLAVE
CUT-OFF FREQ. SWITCH
PEAKING AMP
PEAKING ON/OFF SWITCH
HI-CUT TRAP SWITCH
REC: BUFFER PB: EQ.
EMPHASIS Y LEVEL ADJ
VCA
2H DELAY
2H DELAY (CCD)
CCD CLOCK
3FSC PLL
LPF DELAY 180×5
C ACC AMP
C ACC DET
CROSS TALK
CORR DET
6.6MHz BPF
CHROMA MUTE
ACK SW
ACK DETECT
ACK CONT
ACK DET
SYNC DET
APC DET
APC FILTER
AFC FILTER
AFC DET
375fH VCO
1/375
1/8
4.43MHz VXO
HALF H KILLER BURST FLAG
CLAMP TIME CONSTANT SWITCH
1H DELAY CCD
INVERT AMP
JOG CHROMA PROCESS
SEQUENCE DET
FREQUENCY CONVERTER
PHASE SHIFT
-90° SHIFT
X2
FH VCO
AFC ID
MASK
BF GENERATOR
HALF H KILLER
MODE SWITCH
JOG SWITCH
ON/OFF SWITCH
JOG, ODP: ON
CHARACTER MIX
COMP. REC SWITCH
S VIDEO I/O
MUTE
6dB AMP
EVR (D/A CONVERTER)
ZOOM S
ATF CONT
CH1 MT
CH2 MT
WCLIP
DCLIP
1.5 DEV
1.7 DEV
MAT. ADJ
1.5IR
YD ADJ
MK VCO
REC C MIX
PB Y
EMPH
IR
DEV
CAR
SYNC AGC
C COMB
REC C EVR
CH' MT
FADER
REC Y
SERVO
INDEX MARKER
VIDEO (2)
VTR SYNC
VIDEO MUTE (SYSCON IC501 ㉘)
X301 4.43MHz


JK-108 BOARD
(See Page 4-27)
S VIDEO
VIDEO
DC OUT
IC006
S VIDEO I/O
IC007
VIDEO OUT INHIBIT
IC004
SWITCH
IC003
EVR (D/A CONVERTER)
IC005
EVR (D/A CONVERTER)
IC171
JOG CHROMA PROCESS
IC551
2H DELAY
IC202
IC203
CHARACTER MIX
BUFFER
COMP.REC SWITCH
CLAMP
MUTE
6dB AMP
NV GENERATOR
LEVEL SHIFT
CURRENT LIMITER
BUS DECODER
AGC AMP
INPUT SELECT
Y/C MIX
VIDEO OUT AMP
NOISE CANSEL
ATT
LPF
LIMITER
HPF
NOR/HI8 SWITCH
Y COMB FILTER
COMB FILTER
4.43MHz TRAP
EQ
PEAKING AMP
CUT-OFF FREQ. SWITCH
PEAKING ON/OFF SWITCH
HI-CUT TRAP SWITCH
EMPHASIS Y LEVEL ADJ
VCA
REC:BUFFER PB:EQ.
C ACC AMP
C ACC DET
2H DELAY (CCD)
3FSC PLL
CCD CLOCK
LPF DELAY 180nS
AMP
SEQUENCE DET
FREQUENCY CONVERTER
PHASE SHIFT
-90° SHIFT
X2
APC DET
FH VCO
AFC ID
MASK
HALF H KILLER
BF GENERATOR
MODE SWITCH
JOG SWITCH
ON/OFF SWITCH
JOG, DOP:ON
EVF OUT
EVF (VF-42) (AEP, UK MODEL (VF-65) (E. Australian, Tourist MODEL
EXCEPT E. Australian Tourist MODEL
E. Australian Tourist MODEL
CN301
CN101
W503
CN505
CAMERA (1) (VC-132)
SYSTEM CONTROL
AUDIO (AU-184)
SERVO
VIDEO (2)
INDEX MARKER
S-Y OUT
S-C OUT
VIDEO OUT
S IN
DC OUT
CAM Y
CAM C
REC H
VTR SYNC
FSC
CAM FSC
ZOOM S EVR
AUDIO FADER
1.5 DEV
1.7 DEV
MAT ADJ

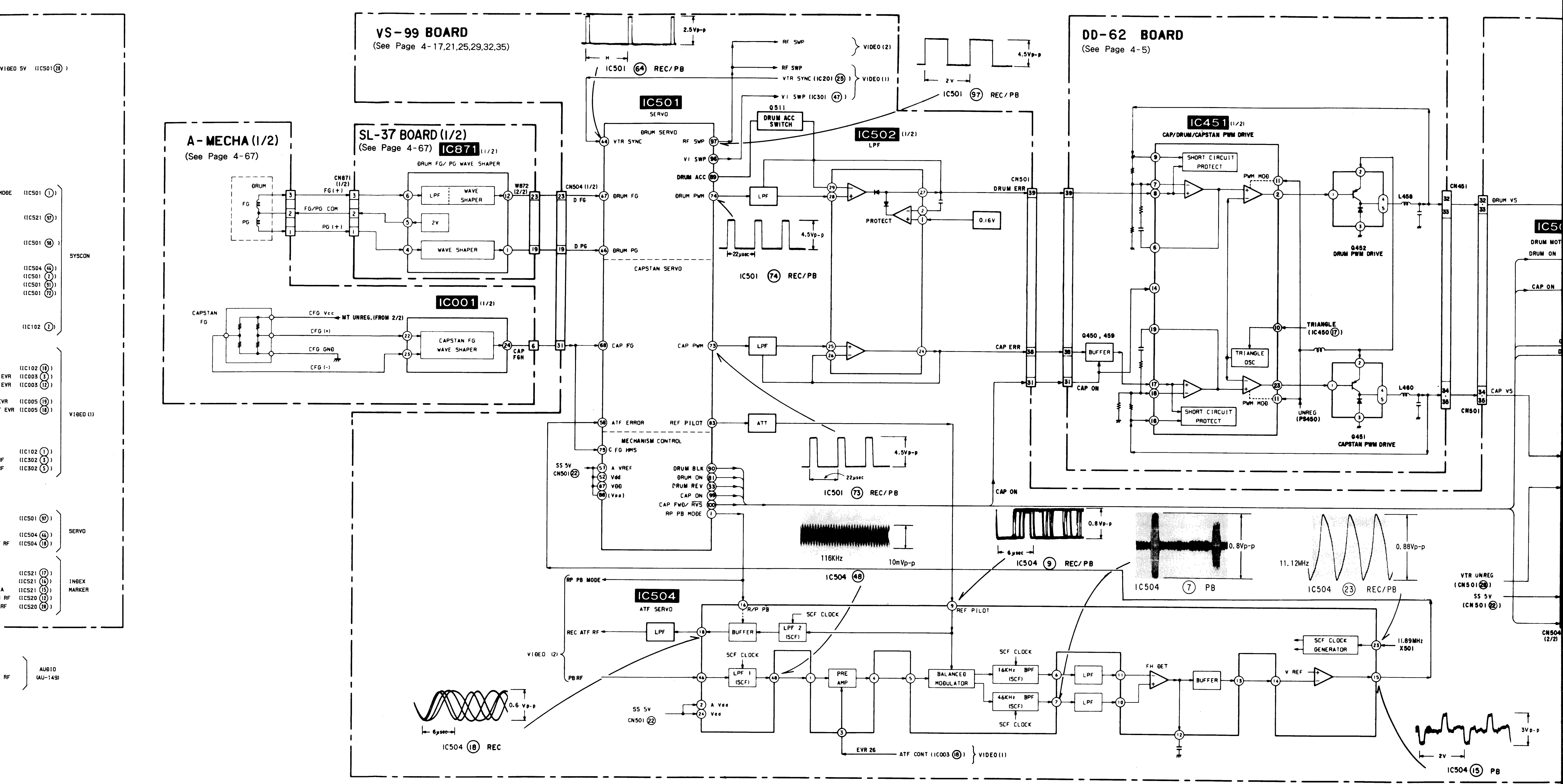
3-6. VIDEO (2) BLOCK DIAGRAM

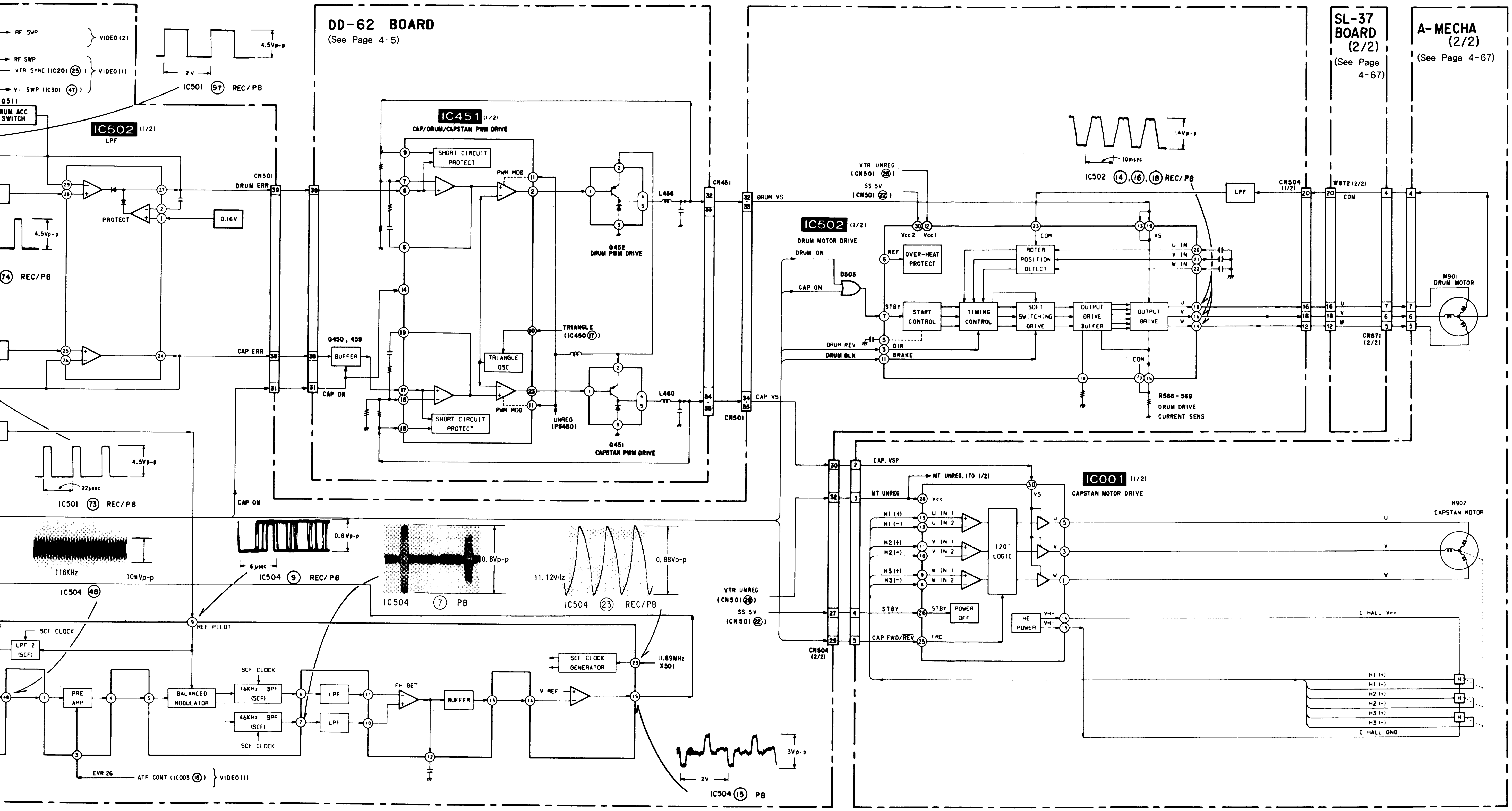

VS-99 BOARD
(See Page 4-17, 21, 25, 29, 32, 35)
CN002
CHECK PIN
PB RF
RF SWP
REC 2CH
PCM OUT
Q014
PCM RF MIX
IC001
REC/PB AMP
VIDEO HEAD 1CH
1CH (X)
1CH (Y)
VIDEO HEAD 2CH
2CH (Y)
2CH (X)
VIDEO HEAD 1'CH
1'CH A (X)
1'CH A (Y)
FLYING ERASE HEAD
FE (X)
W001
Q001, 003
ERASE OSC
Q002
ERASE CURRENT SWITCH
FE ON
ME/HP
Q008, 013
Q007, 012
REC AMP
RAMP
RAMP 1A
RAMP 1B
RAMP 2A
RAMP 2B
PB 5V·1A
PB 5V·1B
PB 5V·2A
PB 5V·2B
REC 5V·1A
REC 5V·1B
REC 5V·2A
REC 5V·2B
52dB AMP
MIDDLE TUNE
MT 1A
MT FO
MT Q
MT 1B
MT 2A
MT 2B
PB RF 2A OUT
PB RF 2B OUT
PB RF 1A OUT
PB RF 1B OUT
PB RF CH 1
PB RF CH 2
VIDEO SW 1
VIDEO SW 2
VIDEO SW 3
PCM SW 1
PCM SW 2
PCM SW 3
12dB AMP
VIDEO SW.
PCM SW.
VP SW
COTROL
IC001 ⑯ REC/PB
40msec
4.4Vp-p
IC001 ⑱ PB
0.5Vp-p
IC001 ⑳ REC
IC001 ㉒ REC
250mVp-p
80mVp-p
PB 5V JOG
SWP
RF SWP
REC 1A
REC 1B
REC 2A
REC 2B
RF OUT
PCM OUT
REC VCC
PB VCC
1A VCC
1B VCC
2A VCC
2B VCC
VIDEO 5V
(CN501 ⑳)
VP SW 1
VP SW 3
VP SW 4
VCA
6dB AMP
ATF IN
Y IN
C IN
AFM IN
RAMP
AF REC
REC AREA
PCM IN
V REG
Q027
L/E
MT Q ADJ
MT FO ADJ
MT 1A
MT 1B
MT 2A
MT 2B
EVR8
EVR9
EVR18
CH1 MT EVR
CH2 MT EVR
CH1' MT EVR
REC 1A
REC 1B
REC 2A
REC 2B
EVR15 ME CONT
REC C EVR
ATF CONT
REC L CONT
SP/LP
Q022, 025
VIDEO 5V (IC501 ⑳)
Q017
Q016
Q023, 021
PB RF PEAKING
Q024
Q026
RP PB MODE (IC501 ①)
RF SWP (IC521 ⑰)
H COH (IC501 ㊿)
PB RF (IC504 ④)
FE ON (IC501 ②)
SP/LP (IC501 ⑧)
ME/HP (IC501 ⑦)
LP/SP (IC102 ②)
SYSCON
E-MP
L/E (IC102 ⑩)
CH1 MT EVR (IC003 ③)
CH2 MT EVR (IC003 ⑫)
REC C EVR (IC005 ⑨)
CH1' MT EVR (IC005 ⑩)
PB 5V
PB RF (IC102 ①)
REC Y RF (IC302 ③)
REC C RF (IC302 ⑤)
VIDEO (1)
RF SWP (IC501 ⑰)
PB RF (IC504 ④)
REC ATF RF (IC504 ⑱)
SERVO
ME/HP
RAMP (IC521 ⑰)
AF REC (IC521 ⑯)
REC AREA (IC521 ⑮)
REC PCM RF (IC520 ⑫)
PB PCM RF (IC520 ㉘)
INDEX MARKER
CN505
PB RF
REC AFM RF
AUDIO (AU-149)
16

3-7. SERVO BLOCK DIAGRAM

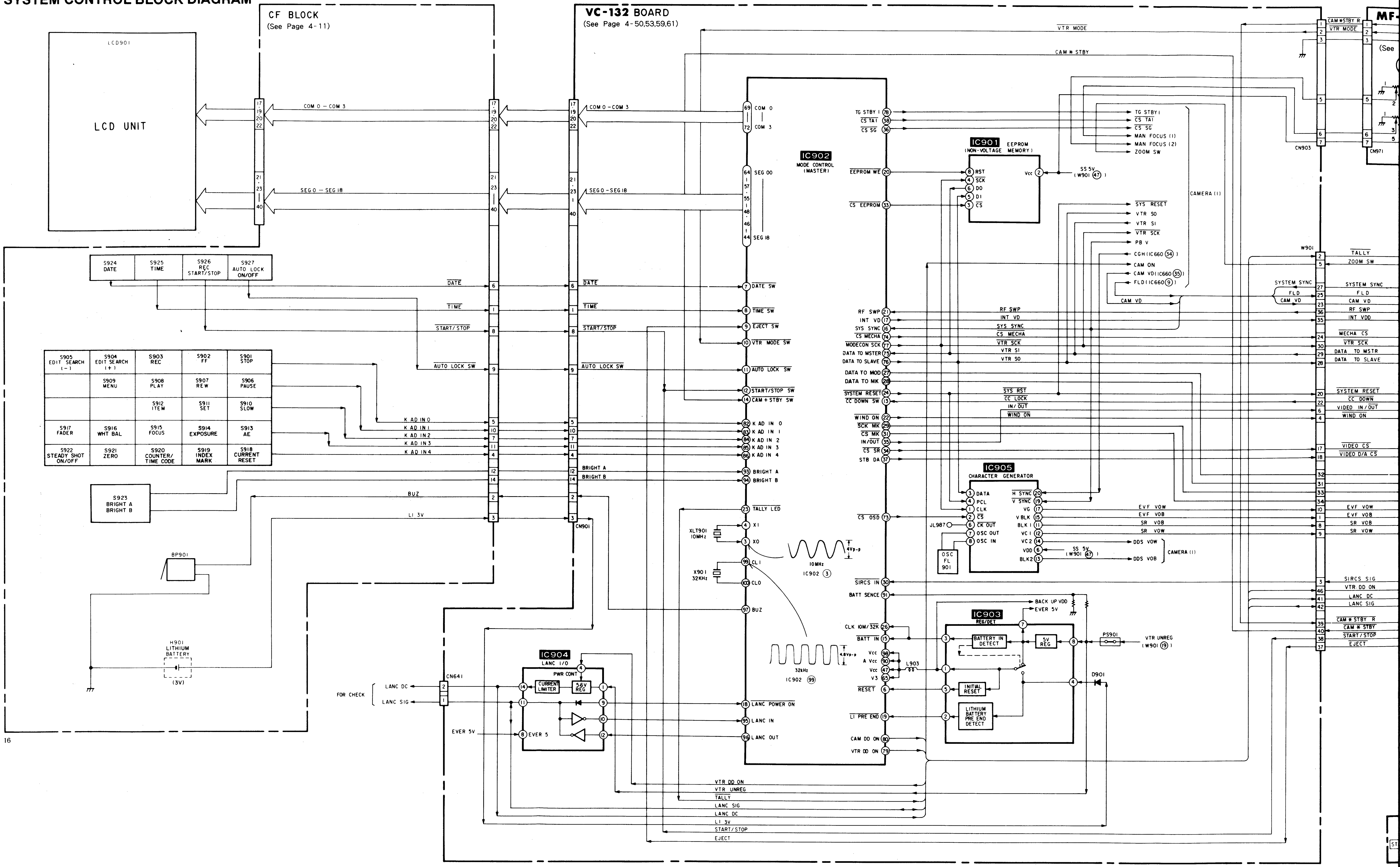

VS-99 BOARD
(See Page 4-17,21,25,29,32,35)
A-MECHA (1/2)
(See Page 4-67)
SL-37 BOARD (1/2)
(See Page 4-67)
IC871 (1/2)
DRUM FG/PG WAVE SHAPER
DRUM
FG
PG
CN871 (1/2)
FG (+)
FG/PG COM
PG (+)
LPF
WAVE SHAPER
2V
W872 (2/2)
IC001 (1/2)
CAPSTAN FG
CFG Vcc
MT UNREG. (FROM 2/2)
CFG (+)
CFG GND
CFG (-)
CAPSTAN FG WAVE SHAPER
CAP FGN
0.6 Vp-p
6μsec
IC504 ⑱ REC

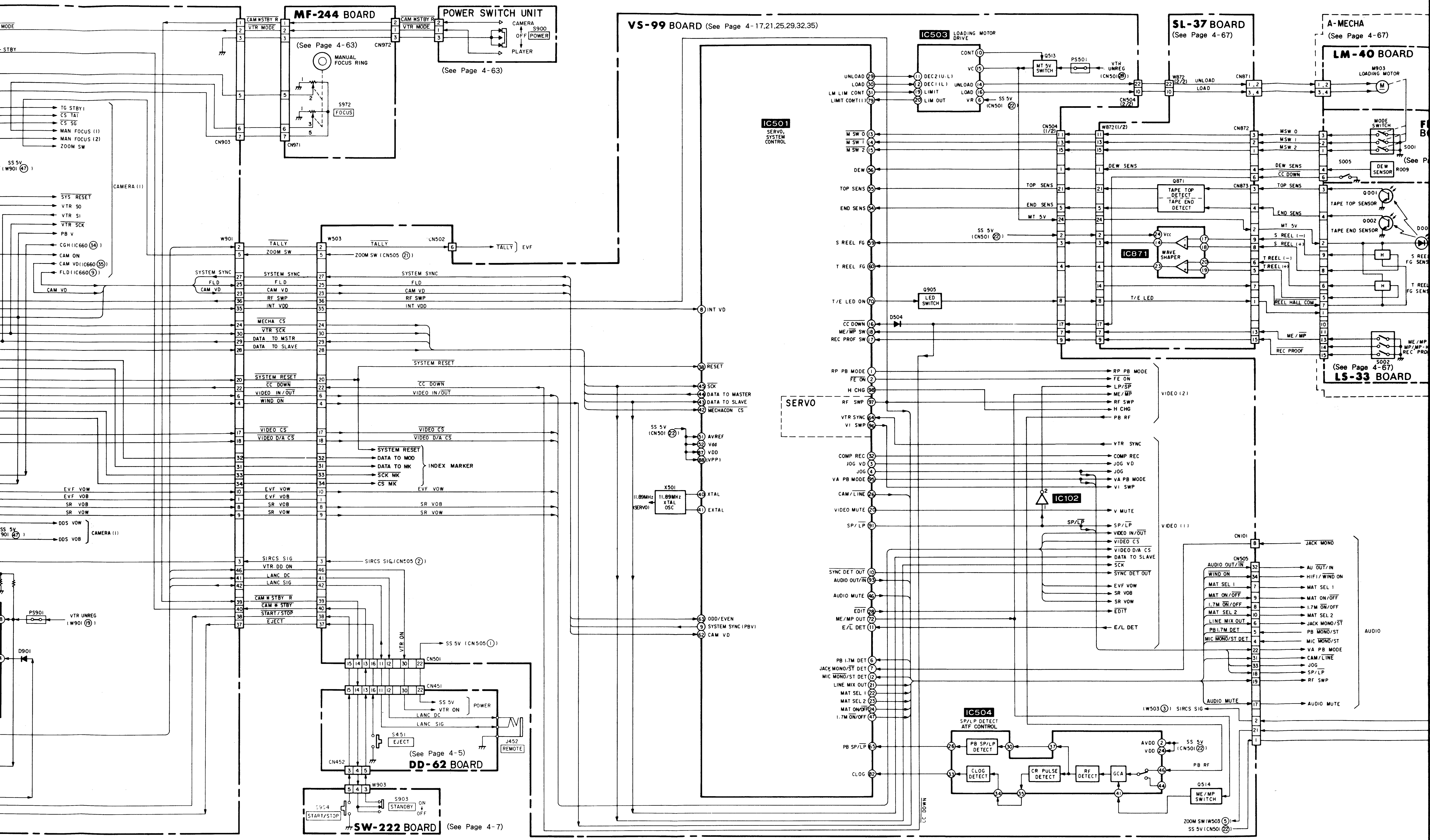
3-7. SERVO BLOCK DIAGRAM

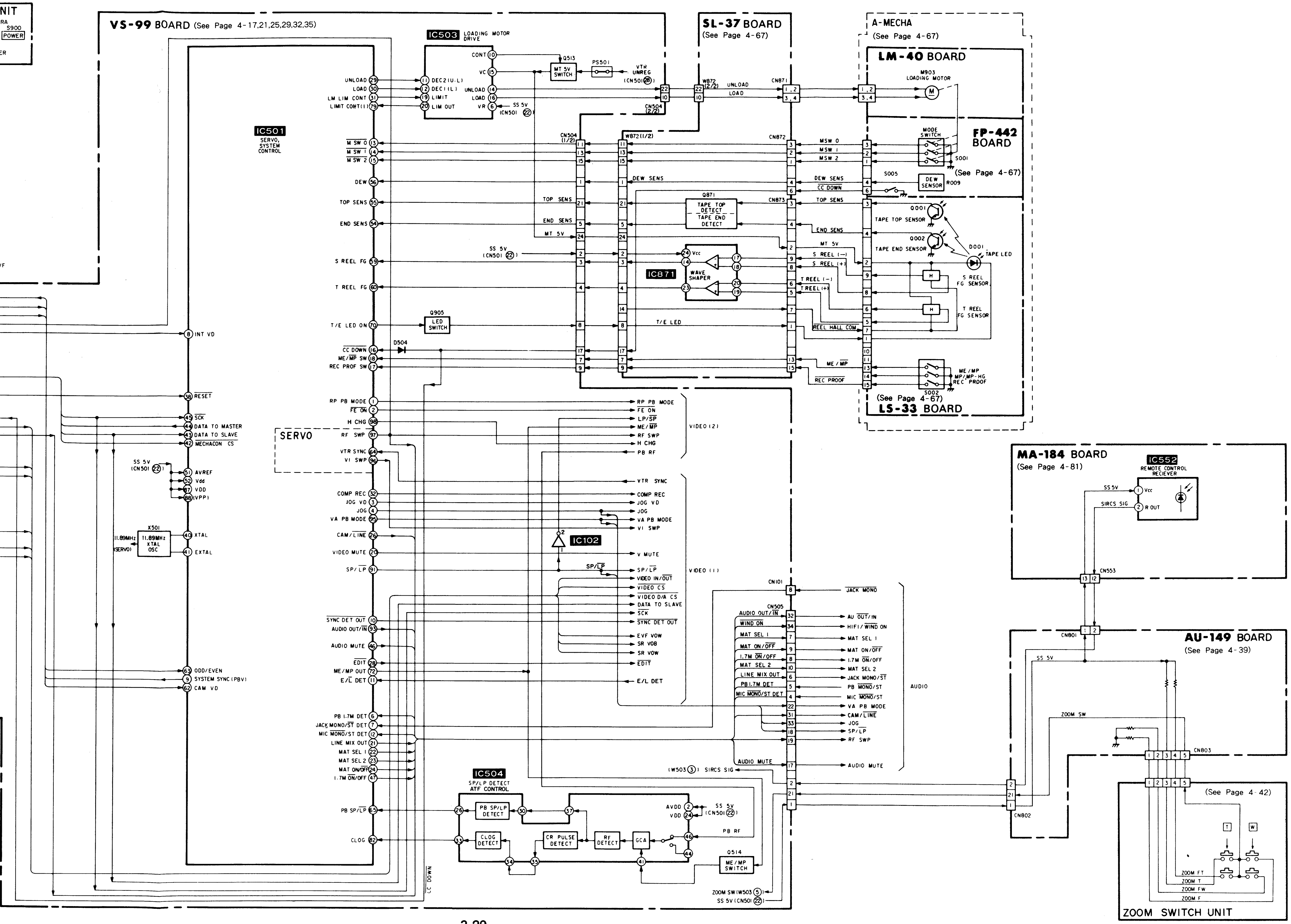

VS-99 BOARD
(See Page 4-17,21,25,29,32,35)
A-MECHA (1/2)
(See Page 4-67)
SL-37 BOARD (1/2)
(See Page 4-67)
IC871 (1/2)
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
2V
WAVE SHAPER
DRUM
FG
PG
CN871 (1/2)
FG(+)
FG/PG COM
PG(+)
W872 (2/2)
CN504 (1/2)
D FG
D PG
IC001 (1/2)
CAPSTAN FG
CFG Vcc
MT UNREG.(FROM 2/2)
CFG (+)
CFG GND
CFG (-)
CAPSTAN FG WAVE SHAPER
CAP FGN
IC501
SERVO
DRUM SERVO
VTR SYNC
RF SWP
VI SWP
DRUM ACC
DRUM PWM
DRUM FG
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHANISM CONTROL
C FG HMS
SS 5V
CN501 ㉒
A VREF
Vdd
VDD
(Vpp)
DRUM BLK
DRUM ON
DRUM REV
CAP ON
CAP FWD/RVS
RP PB MODE
IC501 ⑥④ REC/PB
2.5Vp-p
H
RF SWP
RF SWP
VTR SYNC (IC201 ㉕)
VI SWP (IC301 ④⑦)
VIDEO (2)
VIDEO (1)
Q511
DRUM ACC SWITCH
IC502 (1/2)
LPF
LPF
PROTECT
0.16V
4.5Vp-p
22μsec
IC501 ⑦④ REC/PB
IC501 ⑨⑦ REC/PB
2V
4.5Vp-p
LPF
ATT
4.5Vp-p
22μsec
IC501 ⑦③ REC/PB
CN501
DRUM ERR
CAP ERR
CAP ON
DD-62 BOARD
(See Page 4-5)
IC451 (1/2)
CAP/DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
Q452
DRUM PWM DRIVE
L458
TRIANGLE
(IC450 ⑰)
TRIANGLE OSC
Q450, 459
BUFFER
PWM MOD
SHORT CIRCUIT PROTECT
UNREG
(PS450)
L460
Q451
CAPSTAN PWM DRIVE
CN451
DRUM VS
CAP VS
CN501
DRUM MOT
DRUM ON
CAP ON
IC504
ATF SERVO
RP PB MODE
REC ATF RF
VIDEO (2)
PB RF
LPF
R/P PB
BUFFER
SCF CLOCK
LPF 2 (SCF)
SCF CLOCK
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
SCF CLOCK
LPF
LPF
FH DET
BUFFER
V REF
REF PILOT
SCF CLOCK GENERATOR
11.89MHz
X501
SS 5V
CN501 ㉒
A Vdd
Vdd
EVR 26
ATF CONT (IC003 ⑱)
VIDEO (1)
116KHz
10mVp-p
IC504 ④⑧
0.8Vp-p
6μsec
IC504 ⑨ REC/PB
0.8Vp-p
IC504 ⑦ PB
11.12MHz
0.88Vp-p
IC504 ㉓ REC/PB
0.6Vp-p
6μsec
IC504 ⑱ REC
3Vp-p
2V
IC504 ⑮ PB
VTR UNREG
(CN501 ㉘)
SS 5V
(CN501 ㉒)
CN504 (2/2)
VIDEO 5V (IC501 ⑳)
MODE (IC501 ①)
(IC521 ⑨⑦)
(IC501 ⑤⑧)
(IC504 ④)
(IC501 ②)
(IC501 ⑨①)
(IC501 ⑦②)
SYSCON
(IC102 ②)
(IC102 ⑱)
EVR (IC003 ③)
EVR (IC003 ⑫)
EVR (IC005 ⑲)
EVR (IC005 ⑱)
VIDEO (1)
(IC102 ①)
(IC302 ③)
(IC302 ⑤)
(IC501 ⑨⑦)
(IC504 ④)
RF (IC504 ⑱)
SERVO
(IC521 ⑰)
(IC521 ⑯)
(IC521 ⑮)
RF (IC520 ⑫)
RF (IC520 ㉘)
INDEX MARKER
AUDIO (AU-149)
RF


DD-62 BOARD
(See Page 4-5)
SL-37 BOARD (2/2)
(See Page 4-67)
A-MECHA (2/2)
(See Page 4-67)
IC451 (1/2)
CAP/DRUM/CAPSTAN PWM DRIVE
IC502 (1/2)
LPF
IC502 (1/2)
DRUM MOTOR DRIVE
IC001 (1/2)
CAPSTAN MOTOR DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
TRIANGLE OSC
TRIANGLE (IC450 ⑰)
BUFFER
Q450, 459
Q452 DRUM PWM DRIVE
Q451 CAPSTAN PWM DRIVE
L458
L460
UNREG (PS450)
CN501
CN451
DRUM ERR
CAP ERR
CAP ON
DRUM VS
CAP VS
PROTECT
0.16V
RF SWP
VIDEO (2)
VTR SYNC (IC201 ㉕)
VIDEO (1)
V1 SWP (IC301 ㊼)
Q511
DRUM ACC SWITCH
4.5Vp-p
2V
IC501 (97) REC/PB
IC501 ㉔ REC/PB
IC501 ㉓ REC/PB
22μsec
116KHz
10mVp-p
IC504 ㊽
0.8Vp-p
6μsec
IC504 ⑨ REC/PB
IC504 ⑦ PB
11.12MHz
0.88Vp-p
IC504 ㉓ REC/PB
3Vp-p
IC504 ⑮ PB
REF PILOT
SCF CLOCK
LPF 2 (SCF)
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.89MHz X501
EVR 26
ATF CONT (IC003 ⑱)
VIDEO (1)
VTR UNREG (CN501 ㉘)
SS 5V (CN501 ㉒)
Vcc2 Vcc1
COM
VS
REF
OVER-HEAT PROTECT
ROTER POSITION DETECT
DRUM ON
CAP ON
D505
STBY
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DRUM REV
DRUM BLK
DIR
BRAKE
U IN
V IN
W IN
U
V
W
1 COM
R566-569
DRUM DRIVE CURRENT SENS
14Vp-p
10msec
IC502 ⑭, ⑯, ⑱ REC/PB
LPF
CN504 (1/2)
W872 (2/2)
CN871 (2/2)
M901 DRUM MOTOR
CAP. VSP
MT UNREG. (TO 1/2)
MT UNREG
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
HE POWER
VH+
VH-
CAP FWD/REV
FRC
CN504 (2/2)
M902 CAPSTAN MOTOR
C HALL Vcc
C HALL GND

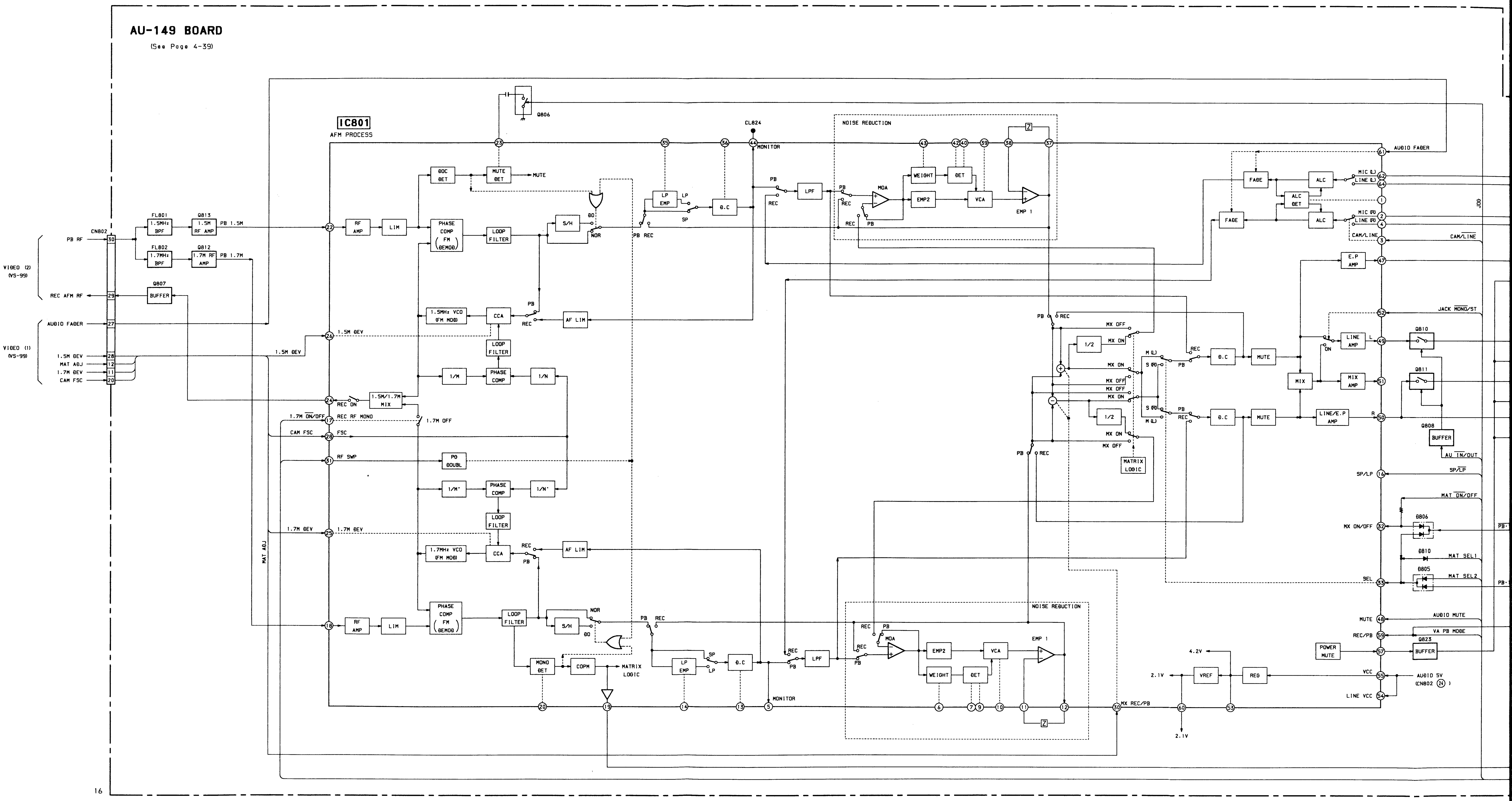
3-8. SYSTEM CONTROL BLOCK DIAGRAM


CF BLOCK
(See Page 4-11)
VC-132 BOARD
(See Page 4-50,53,59,61)
LCD901
LCD UNIT
COM 0 – COM 3
SEG0 – SEG18
S924 DATE
S925 TIME
S926 REC START/STOP
S927 AUTO LOCK ON/OFF
S905 EDIT SEARCH (–)
S904 EDIT SEARCH (+)
S903 REC
S902 FF
S901 STOP
S909 MENU
S908 PLAY
S907 REW
S906 PAUSE
S912 ITEM
S911 SET
S910 SLOW
S917 FADER
S916 WHT BAL
S915 FOCUS
S914 EXPOSURE
S913 AE
S922 STEADY SHOT ON/OFF
S921 ZERO
S920 COUNTER/TIME CODE
S919 INDEX MARK
S918 CURRENT RESET
S923 BRIGHT A BRIGHT B
BP901
H901 LITHIUM BATTERY (3V)
DATE
TIME
START/STOP
AUTO LOCK SW
K AD IN 0
K AD IN 1
K AD IN 2
K AD IN 3
K AD IN 4
BRIGHT A
BRIGHT B
BUZ
LI 3V
CN901
CN641
FOR CHECK
LANC DC
LANC SIG
EVER 5V
IC904 LANC I/O
PWR CONT
CURRENT LIMITER
5.6V REG
EVER 5
IC902 MODE CONTROL (MASTER)
COM 0
COM 3
SEG 00
SEG 18
DATE SW
TIME SW
EJECT SW
VTR MODE SW
AUTO LOCK SW
START/STOP SW
CAM＊STBY SW
K AD IN 0
K AD IN 1
K AD IN 2
K AD IN 3
K AD IN 4
BRIGHT A
BRIGHT B
TALLY LED
XI
XO
XLT901 10MHz
CLI
CLO
X901 32KHz
BUZ
10MHz IC902 ③
4Vp-p
32kHz IC902 ㊾
4.8Vp-p
LANC POWER ON
LANC IN
LANC OUT
TG STBY I
CS TAI
CS SG
EEPROM WE
CS EEPROM
RF SWP
INT VD
SYS SYNC
CS MECHA
MODECON SCK
DATA TO MSTER
DATA TO SLAVE
DATA TO MOD
DATA TO MK
SYSTEM RESET
CC DOWN SW
WIND ON
SCK MK
CS MK
IN/OUT
CS SR
STB DA
CS OSD
SIRCS IN
BATT SENCE
CLK 10M/32K
BATT IN
Vcc
A Vcc
V3
RESET
LI PRE END
CAM DD ON
VTR DD ON
IC901 EEPROM (NON-VOLTAGE MEMORY)
RST
SCK
DO
DI
CS
Vcc
SS 5V (W901 ㊼)
IC905 CHARACTER GENERATOR
DATA
PCL
CLK
CS
CK OUT
OSC OUT
OSC IN
H SYNC
V SYNC
VG
V BLK
BLK I
VC I
VC 2
VDD
BLK2
JL987
OSC FL 901
DDS VOW
DDS VOB
CAMERA (1)
IC903 REG/DET
BATTERY IN DETECT
5V REG
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
BACK UP VDD
EVER 5V
L903
PS901
VTR UNREG (W901 ⑲)
D901
TG STBY I
CS TAI
CS SG
MAN FOCUS (1)
MAN FOCUS (2)
ZOOM SW
SYS RESET
VTR SO
VTR SI
VTR SCK
PB V
CGH (IC660 ㉞)
CAM ON
CAM VD (IC660 ㉟)
FLD (IC660 ⑨)
CAM VD
VTR MODE
CAM＊STBY
SYSTEM SYNC
FLD
CAM VD
RF SWP
INT VD
SYS SYNC
CS MECHA
VTR SCK
VTR SI
VTR SO
SYS RST
CC LOCK
IN/OUT
WIND ON
EVF VOW
EVF VOB
SR VOB
SR VOW
W901
TALLY
ZOOM SW
SYSTEM SYNC
FLD
CAM VD
RF SWP
INT VDD
MECHA CS
VTR SCK
DATA TO MSTR
DATA TO SLAVE
SYSTEM RESET
CC DOWN
VIDEO IN/OUT
WIND ON
VIDEO CS
VIDEO D/A CS
EVF VOW
EVF VOB
SR VOB
SR VOW
SIRCS SIG
VTR DD ON
LANC DC
LANC SIG
CAM＊STBY R
CAM＊STBY
START/STOP
EJECT
VTR DD ON
VTR UNREG
TALLY
LANC SIG
LANC DC
LI 3V
START/STOP
EJECT
CN903
CAM＊STBY R
VTR MODE
MF
(See
CN971
16


MF-244 BOARD
(See Page 4-63)
CN972
CN971
CN903
MANUAL FOCUS RING
S972
FOCUS
POWER SWITCH UNIT
CAMERA
OFF
PLAYER
S900
POWER
(See Page 4-63)
CAM ✱STBY R
VTR MODE
TG STBY1
CS TAI
CS SG
MAN FOCUS (1)
MAN FOCUS (2)
ZOOM SW
SS 5V (W901 ㊼)
CAMERA (1)
SYS RESET
VTR SO
VTR SI
VTR SCK
PB V
CGH (IC660 ㉞)
CAM ON
CAM VD (IC660 ㉟)
FLD (IC660 ⑨)
CAM VD
W901
W503
CN502
TALLY
ZOOM SW
ZOOM SW (CN505 ㉑)
TALLY EVF
SYSTEM SYNC
FLD
CAM VD
RF SWP
INT VDD
MECHA CS
VTR SCK
DATA TO MSTR
DATA TO SLAVE
SYSTEM RESET
CC DOWN
VIDEO IN/OUT
WIND ON
VIDEO CS
VIDEO D/A CS
SYSTEM RESET
DATA TO MOD
DATA TO MK
SCK MK
CS MK
INDEX MARKER
EVF VOW
EVF VOB
SR VOB
SR VOW
DDS VOW
DDS VOB
CAMERA (1)
SIRCS SIG
SIRCS SIG (CN505 ②)
VTR DD ON
LANC DC
LANC SIG
CAM ✱ STBY R
CAM ✱ STBY
START/STOP
EJECT
PS901
VTR UNREG (W901 ⑲)
D901
VTR ON
SS 5V (CN505 ①)
CN501
CN451
SS 5V
VTR ON
POWER
LANC DC
LANC SIG
S451
EJECT
J452
REMOTE
(See Page 4-5)
DD-62 BOARD
CN452
W903
S904
START/STOP
S903
STANDBY
ON
OFF
SW-222 BOARD
(See Page 4-7)
VS-99 BOARD (See Page 4-17,21,25,29,32,35)
IC501
SERVO, SYSTEM CONTROL
IC503
LOADING MOTOR DRIVE
CONT
VC
DEC2 (U-L)
DEC1 (L)
LIMIT
LIM OUT
UNLOAD
LOAD
VR
Q513
MT 5V SWITCH
PS501
VTR UNREG (CN501 ㉘)
SS 5V (CN501 ㉒)
UNLOAD
LOAD
LM LIM CONT
LIMIT CONT (1)
CN504 (2/2)
CN504 (1/2)
M SW 0
M SW 1
M SW 2
DEW
TOP SENS
END SENS
S REEL FG
T REEL FG
T/E LED ON
CC DOWN
ME/MP SW
REC PROF SW
SS 5V (CN501 ㉒)
Q905
LED SWITCH
D504
MT 5V
IC871
WAVE SHAPER
Vcc
Q871
TAPE TOP DETECT
TAPE END DETECT
T/E LED
SYSTEM RESET
RESET
SCK
DATA TO MASTER
DATA TO SLAVE
MECHACON CS
INT VD
SS 5V (CN501 ㉒)
AVREF
Vdd
VDD
(VPP)
X501
11.89MHz XTAL OSC
11.89MHz (SERVO)
XTAL
EXTAL
ODD/EVEN
SYSTEM SYNC (PBV)
CAM VD
SERVO
RP PB MODE
FE ON
H CHG
RF SWP
VTR SYNC
VI SWP
COMP REC
JOG VD
JOG
VA PB MODE
CAM/LINE
VIDEO MUTE
SP/LP
RP PB MODE
FE ON
LP/SP
ME/MP
RF SWP
H CHG
PB RF
VIDEO (2)
VTR SYNC
COMP REC
JOG VD
JOG
VA PB MODE
VI SWP
IC102
V MUTE
SP/LP
VIDEO IN/OUT
VIDEO CS
VIDEO D/A CS
DATA TO SLAVE
SCK
SYNC DET OUT
EVF VOW
SR VOB
SR VOW
EDIT
E/L DET
VIDEO (1)
SYNC DET OUT
AUDIO OUT/IN
AUDIO MUTE
EDIT
ME/MP OUT
E/L DET
PB 1.7M DET
JACK MONO/ST DET
MIC MONO/ST DET
LINE MIX OUT
MAT SEL 1
MAT SEL 2
MAT ON/OFF
1.7M ON/OFF
PB SP/LP
CLOG
IC504
SP/LP DETECT ATF CONTROL
PB SP/LP DETECT
CLOG DETECT
CR PULSE DETECT
RF DETECT
GCA
AVDD
VDD
SS 5V (CN501 ㉒)
PB RF
Q514
ME/MP SWITCH
ZOOM SW (W503 ⑤)
SS 5V (CN501 ㉒)
(W503 ③) SIRCS SIG
CN101
CN505
JACK MONO
AUDIO OUT/IN
WIND ON
MAT SEL 1
MAT ON/OFF
1.7M ON/OFF
MAT SEL 2
LINE MIX OUT
PB 1.7M DET
MIC MONO/ST DET
AUDIO MUTE
AU OUT/IN
HIFI/WIND ON
MAT SEL 1
MAT ON/OFF
1.7M ON/OFF
MAT SEL 2
JACK MONO/ST
PB MONO/ST
MIC MONO/ST
VA PB MODE
CAM/LINE
JOG
SP/LP
RF SWP
AUDIO MUTE
AUDIO
SL-37 BOARD
(See Page 4-67)
W872 (2/2)
W872 (1/2)
CN871
CN872
CN873
UNLOAD
LOAD
DEW SENS
TOP SENS
END SENS
MT 5V
S REEL (-)
S REEL (+)
T REEL (-)
T REEL (+)
REEL HALL COM
ME/MP
REC PROOF
MSW 0
MSW 1
MSW 2
DEW SENS
CC DOWN
TOP SENS
A-MECHA
(See Page 4-67)
LM-40 BOARD
M903
LOADING MOTOR
MODE SWITCH
S001
S005
DEW SENSOR
R009
Q001
TAPE TOP SENSOR
Q002
TAPE END SENSOR
D001
S REEL FG SENS
T REEL FG SENS
ME/MP
MP/MP-H
REC PROOF
S002
(See Page 4-67)
LS-33 BOARD


VS-99 BOARD (See Page 4-17,21,25,29,32,35)
IC503 LOADING MOTOR DRIVE
IC501 SERVO, SYSTEM CONTROL
UNLOAD
LOAD
LM LIM CONT
LIMIT CONT(1)
DEC2(U-L)
DEC1(L)
LIMIT
LIM OUT
CONT
VC
VR
Q513 MT 5V SWITCH
PS501
VTR UNREG (CN501 ㉘)
SS 5V (CN501 ㉒)
CN504 (2/2)
CN504 (1/2)
W872 (1/2)
W872 (2/2)
M SW 0
M SW 1
M SW 2
DEW
TOP SENS
END SENS
MT 5V
S REEL FG
T REEL FG
T/E LED ON
Q905 LED SWITCH
D504
CC DOWN
ME/MP SW
REC PROF SW
INT VD
RESET
SCK
DATA TO MASTER
DATA TO SLAVE
MECHACON CS
SS 5V (CN501 ㉒)
AVREF
Vdd
VDD
(VPP)
X501 11.89MHz XTAL OSC
11.89MHz (SERVO)
XTAL
EXTAL
ODD/EVEN
SYSTEM SYNC (PBV)
CAM VD
RP PB MODE
FE ON
H CHG
SERVO
RF SWP
VTR SYNC
VI SWP
COMP REC
JOG VD
JOG
VA PB MODE
CAM/LINE
VIDEO MUTE
SP/LP
IC102
SYNC DET OUT
AUDIO OUT/IN
AUDIO MUTE
EDIT
ME/MP OUT
E/L DET
PB 1.7M DET
JACK MONO/ST DET
MIC MONO/ST DET
LINE MIX OUT
MAT SEL 1
MAT SEL 2
MAT ON/OFF
1.7M ON/OFF
PB SP/LP
CLOG
CC DOWN
VIDEO (2)
LP/SP
ME/MP
PB RF
V MUTE
VIDEO (1)
VIDEO IN/OUT
VIDEO CS
VIDEO D/A CS
EVF VOW
SR VOB
SR VOW
IC504 SP/LP DETECT ATF CONTROL
PB SP/LP DETECT
CLOG DETECT
CR PULSE DETECT
RF DETECT
GCA
AVDD
VDD
SS 5V (CN501 ㉒)
Q514 ME/MP SWITCH
ZOOM SW (W503 ⑤)
SS 5V (CN501 ㉒)
(W503 ③) SIRCS SIG
SL-37 BOARD (See Page 4-67)
CN871
CN872
CN873
Q871 TAPE TOP DETECT TAPE END DETECT
IC871 WAVE SHAPER
Vcc
DEW SENS
T/E LED
CN101
CN505
JACK MONO
AU OUT/IN
WIND ON
HIFI/WIND ON
MAT SEL 1
MAT ON/OFF
1.7M ON/OFF
MAT SEL 2
LINE MIX OUT
JACK MONO/ST
PB 1.7M DET
PB MONO/ST
MIC MONO/ST DET
MIC MONO/ST
VA PB MODE
CAM/LINE
JOG
SP/LP
RF SWP
AUDIO MUTE
AUDIO
A-MECHA (See Page 4-67)
LM-40 BOARD
M903 LOADING MOTOR
FP-442 BOARD (See Page 4-67)
MODE SWITCH
S001
MSW 0
MSW 1
MSW 2
S005
DEW SENS
CC DOWN
DEW SENSOR
R009
TOP SENS
END SENS
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
D001 TAPE LED
MT 5V
S REEL (-)
S REEL (+)
T REEL (-)
T REEL (+)
S REEL FG SENSOR
T REEL FG SENSOR
REEL HALL COM
ME/MP
REC PROOF
S002
ME/MP MP/MP-HG REC PROOF
(See Page 4-67)
LS-33 BOARD
MA-184 BOARD (See Page 4-81)
IC552 REMOTE CONTROL RECIEVER
SS 5V
Vcc
SIRCS SIG
R OUT
CN553
CN801
AU-149 BOARD (See Page 4-39)
SS 5V
ZOOM SW
CN803
CN802
(See Page 4-42)
T
W
ZOOM FT
ZOOM T
ZOOM FW
ZOOM F
ZOOM SWITCH UNIT
NIT
S900
POWER

3-9. AUDIO BLOCK DIAGRAM


AU-149 BOARD
(See Page 4-39)
IC801
AFM PROCESS
VIDEO (2) (VS-99)
PB RF
REC AFM RF
AUDIO FADER
VIDEO (1) (VS-99)
1.5M DEV
MAT ADJ
1.7M DEV
CAM FSC
CN802
FL801 1.5MHz BPF
Q813 1.5M RF AMP
PB 1.5M
FL802 1.7MHz BPF
Q812 1.7M RF AMP
PB 1.7M
Q807 BUFFER
Q806
RF AMP
LIM
DOC DET
MUTE DET
MUTE
PHASE COMP (FM DEMOD)
LOOP FILTER
S/H
DO
NOR
1.5MHz VCO (FM MOD)
CCA
AF LIM
REC
PB
1/M
PHASE COMP
1/N
1.5M/1.7M MIX
REC ON
1.7M ON/OFF
REC RF MONO
1.7M OFF
CAM FSC
FSC
RF SWP
PG DOUBL
1/M'
1/N'
1.7M DEV
1.7MHz VCO (FM MOD)
MAT ADJ
MONO DET
COPM
MATRIX LOGIC
CL824
MONITOR
LP EMP
LP
SP
D.C
PB REC
LPF
NOISE REDUCTION
WEIGHT
DET
MDA
EMP2
VCA
EMP 1
Z
MX OFF
MX ON
1/2
M (L)
S (R)
MATRIX LOGIC
MIX
MIX AMP
LINE AMP
LINE/E.P AMP
E.P AMP
FADE
ALC
ALC DET
AUDIO FADER
MIC (L)
LINE (L)
MIC (R)
LINE (R)
CAM/LINE
JACK MONO/ST
Q810
Q811
Q808 BUFFER
AU IN/OUT
SP/LP
MAT ON/OFF
MX ON/OFF
Q806
Q810 MAT SEL1
Q805 MAT SEL2
SEL
MUTE
AUDIO MUTE
REC/PB
VA PB MODE
Q823 BUFFER
POWER MUTE
4.2V
2.1V
VREF
REG
VCC
AUDIO 5V (CN802 ㉔)
LINE VCC
MX REC/PB
JOG
16

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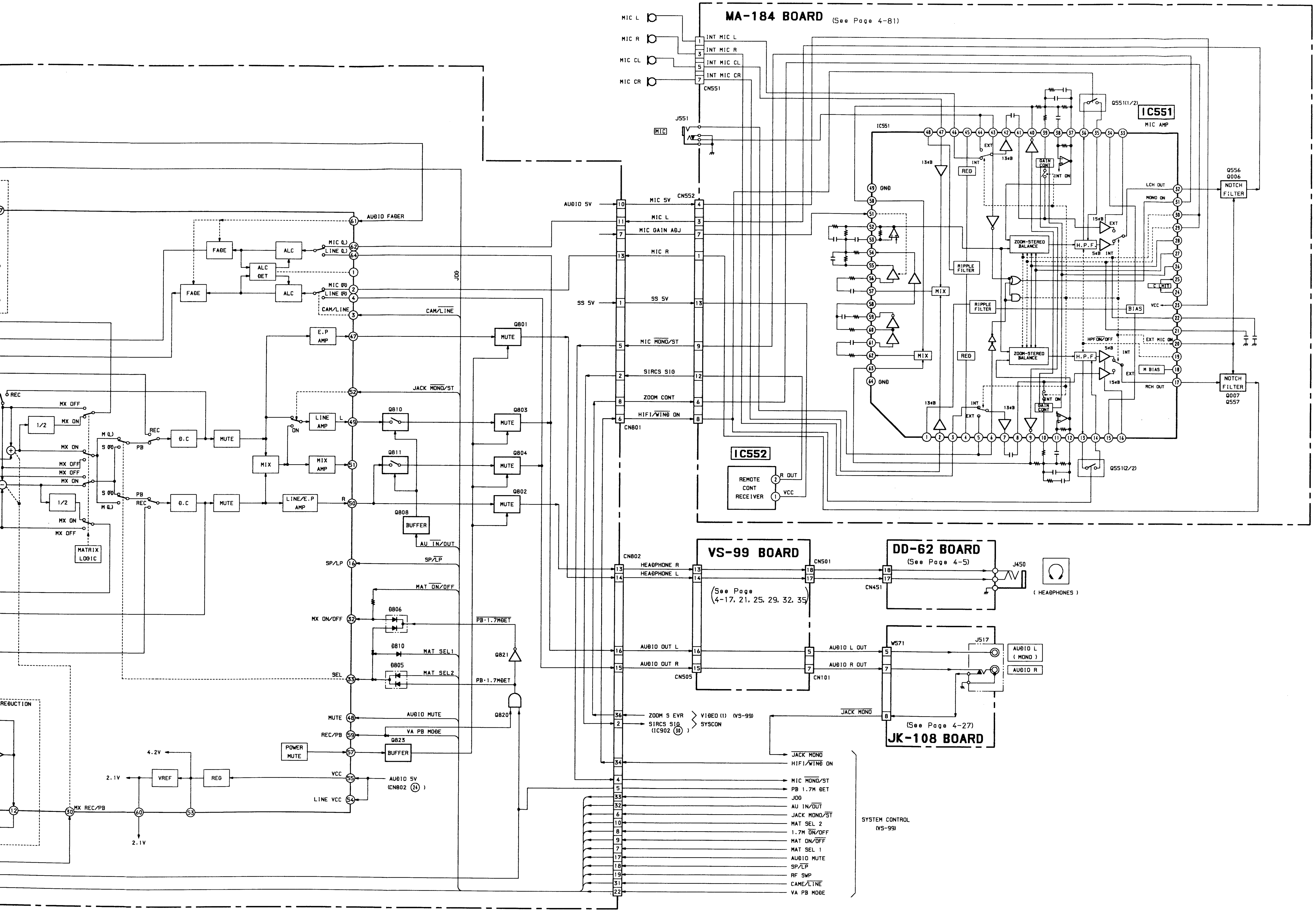
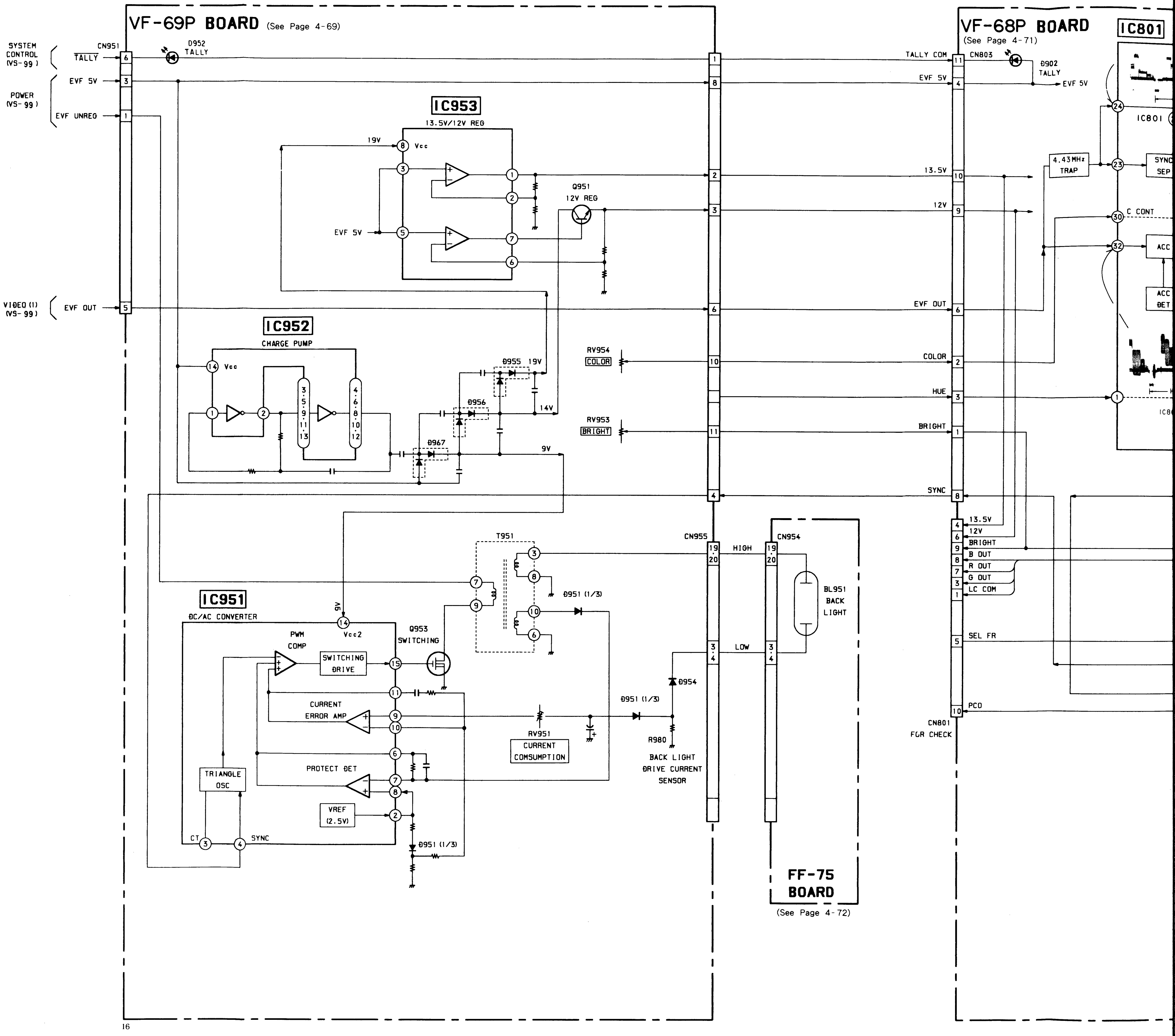
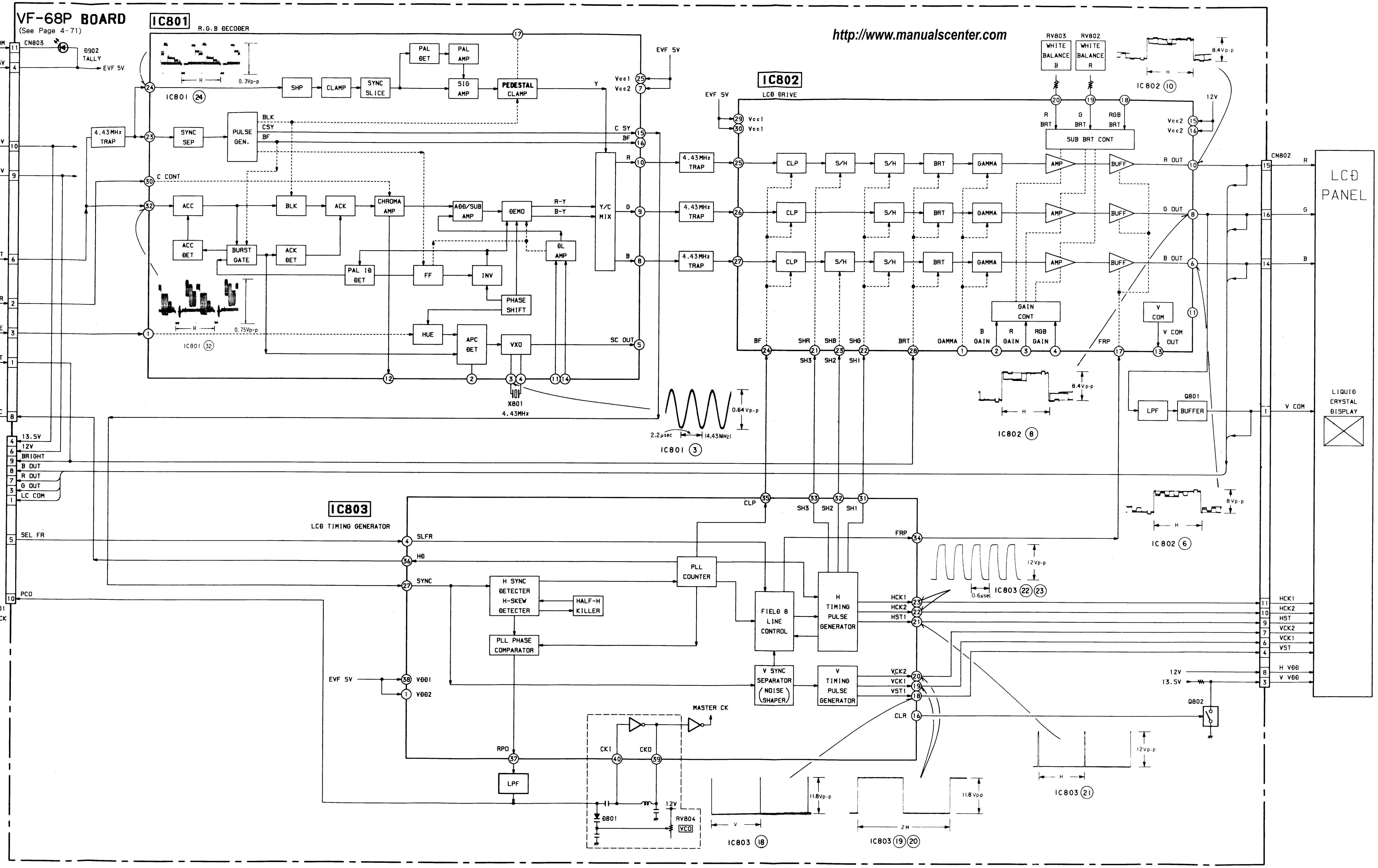

MA-184 BOARD (See Page 4-81)
MIC L
MIC R
MIC CL
MIC CR
INT MIC L
INT MIC R
INT MIC CL
INT MIC CR
CN551
J551
MIC
IC551
MIC AMP
Q551(1/2)
Q551(2/2)
GND
EXT
INT
13dB
15dB
5dB
REG
GAIN CONT
INT ON
LCH OUT
MONO ON
RCH OUT
NOTCH FILTER
Q556
Q006
Q007
Q557
ZOOM-STEREO BALANCE
H.P.F.
RIPPLE FILTER
MIX
BIAS
VCC
HPF ON/OFF
EXT MIC ON
M BIAS
IC552
REMOTE CONT RECEIVER
R OUT
VCC
CN552
MIC 5V
MIC L
MIC GAIN ADJ
MIC R
SS 5V
MIC MONO/ST
SIRCS SIG
ZOOM CONT
HIFI/WIND ON
AUDIO 5V
SS 5V
CN801
CN802
AUDIO FADER
FADE
ALC
ALC DET
MIC (L)
LINE (L)
MIC (R)
LINE (R)
CAM/LINE
JOG
E.P AMP
Q801
MUTE
JACK MONO/ST
LINE AMP
MIX AMP
LINE/E.P AMP
Q810
Q811
Q803
Q804
Q802
Q808
BUFFER
AU IN/OUT
SP/LP
MAT ON/OFF
Q806
PB-1.7MDET
MX ON/OFF
Q810
MAT SEL1
Q805
MAT SEL2
SEL
Q821
Q820
MUTE
AUDIO MUTE
REC/PB
VA PB MODE
Q823
POWER MUTE
4.2V
2.1V
VREF
REG
VCC
AUDIO 5V (CN802 ㉔)
LINE VCC
MX REC/PB
REC
MX OFF
MX ON
1/2
M (L)
S (R)
PB
D.C
MIX
MATRIX LOGIC
REDUCTION
VS-99 BOARD
HEADPHONE R
HEADPHONE L
(See Page 4-17, 21, 25, 29, 32, 35)
CN501
AUDIO OUT L
AUDIO OUT R
CN505
CN101
DD-62 BOARD
(See Page 4-5)
CN451
J450
(HEADPHONES)
JK-108 BOARD
(See Page 4-27)
W571
J517
AUDIO L (MONO)
AUDIO R
AUDIO L OUT
AUDIO R OUT
JACK MONO
ZOOM S EVR
SIRCS SIG (IC902 ㊳)
VIDEO (1) (VS-99)
SYSCON
JACK MONO
HIFI/WIND ON
MIC MONO/ST
PB 1.7M DET
JOG
AU IN/OUT
JACK MONO/ST
MAT SEL 2
1.7M ON/OFF
MAT ON/OFF
MAT SEL 1
AUDIO MUTE
SP/LP
RF SWP
CAME/LINE
VA PB MODE
SYSTEM CONTROL (VS-99)

3-10. EVF BLOCK DIAGRAM (E, Australian, Tourist model)


VF-69P BOARD (See Page 4-69)
SYSTEM CONTROL (VS-99)
POWER (VS-99)
VIDEO (1) (VS-99)
CN951
TALLY
EVF 5V
EVF UNREG
EVF OUT
D952 TALLY
IC953
13.5V/12V REG
19V
Vcc
EVF 5V
Q951 12V REG
IC952
CHARGE PUMP
Vcc
D955 19V
D956
D967
14V
9V
RV954 COLOR
RV953 BRIGHT
CN955
HIGH
LOW
T951
D951 (1/3)
IC951
DC/AC CONVERTER
9V
Vcc2
PWM COMP
SWITCHING DRIVE
Q953 SWITCHING
CURRENT ERROR AMP
PROTECT DET
TRIANGLE OSC
VREF (2.5V)
CT
SYNC
RV951 CURRENT CONSUMPTION
D954
R980
BACK LIGHT DRIVE CURRENT SENSOR
CN954
BL951 BACK LIGHT
FF-75 BOARD
(See Page 4-72)
VF-68P BOARD
(See Page 4-71)
IC801
TALLY COM
CN803
D902 TALLY
EVF 5V
13.5V
12V
EVF OUT
COLOR
HUE
BRIGHT
SYNC
4.43MHz TRAP
SYNC SEP
C CONT
ACC
ACC DET
13.5V
12V
BRIGHT
B OUT
R OUT
G OUT
LC COM
SEL FR
PCO
CN801 FOR CHECK
16


VF-68P BOARD
(See Page 4-71)
CN803
D902 TALLY
EVF 5V
IC801
R.G.B DECODER
0.3Vp-p
IC801 ㉔
SHP
CLAMP
SYNC SLICE
PAL DET
PAL AMP
SIG AMP
PEDESTAL CLAMP
Y
Vcc1
Vcc2
4.43MHz TRAP
SYNC SEP
PULSE GEN.
BLK
CSY
BF
C SY
C CONT
ACC
ACC DET
BURST GATE
ACK
ACK DET
BLK
CHROMA AMP
ADD/SUB AMP
DEMO
R-Y
B-Y
Y/C MIX
R
G
B
PAL ID DET
FF
INV
DL AMP
PHASE SHIFT
HUE
APC DET
VXO
SC OUT
0.75Vp-p
IC801 ㉜
X801 4.43MHz
0.64Vp-p
2.2μsec
(4.43MHz)
IC801 ③
13.5V
12V
BRIGHT
B OUT
R OUT
G OUT
LC COM
SEL FR
PCO
IC802
LCD DRIVE
EVF 5V
RV803 WHITE BALANCE B
RV802 WHITE BALANCE R
8.4Vp-p
IC802 ⑩
R BRT
G BRT
RGB BRT
SUB BRT CONT
Vcc2
12V
CLP
S/H
BRT
GAMMA
AMP
BUFF
R OUT
G OUT
B OUT
GAIN CONT
V COM
V COM OUT
BF
SHR
SHB
SHG
SH3
SH2
SH1
B GAIN
R GAIN
RGB GAIN
FRP
8.4Vp-p
IC802 ⑧
LPF
Q801 BUFFER
CN802
LCD PANEL
LIQUID CRYSTAL DISPLAY
V COM
8Vp-p
IC802 ⑥
IC803
LCD TIMING GENERATOR
SLFR
HD
SYNC
CLP
FRP
PLL COUNTER
H SYNC DETECTER
H-SKEW DETECTER
HALF-H KILLER
PLL PHASE COMPARATOR
FIELD & LINE CONTROL
H TIMING PULSE GENERATOR
HCK1
HCK2
HST1
12Vp-p
0.6μsec
IC803 ㉒㉓
V SYNC SEPARATOR (NOISE SHAPER)
V TIMING PULSE GENERATOR
VCK2
VCK1
VST1
CLR
VDD1
VDD2
HCK1
HCK2
HST
VCK2
VCK1
VST
H VDD
V VDD
12V
13.5V
Q802
MASTER CK
CKI
CKO
RPO
LPF
D801
12V
RV804 VCO
11.8Vp-p
IC803 ⑱
IC803 ⑲⑳
12Vp-p
IC803 ㉑

3-11. EVF BLOCK DIAGRAM (AEP, UK model)

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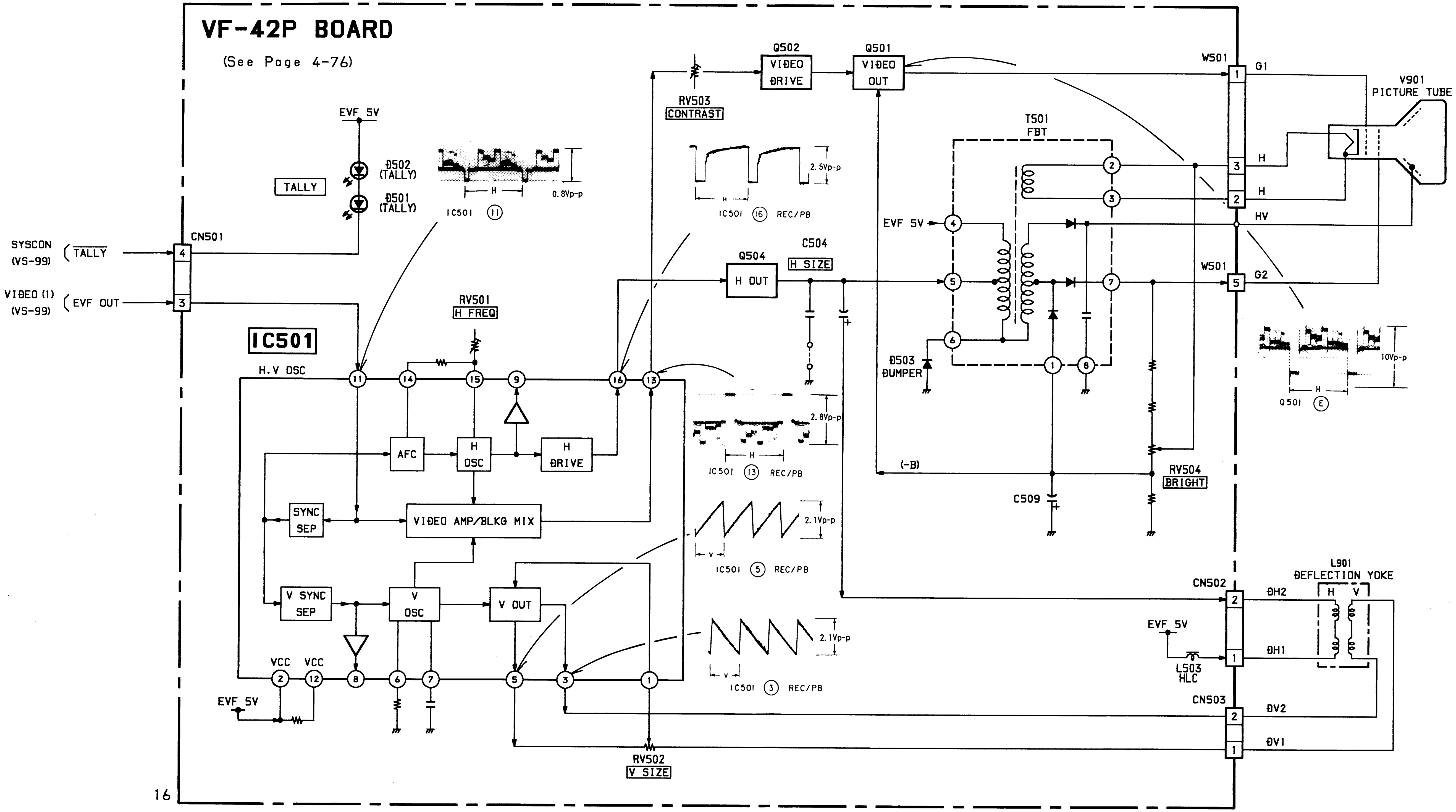
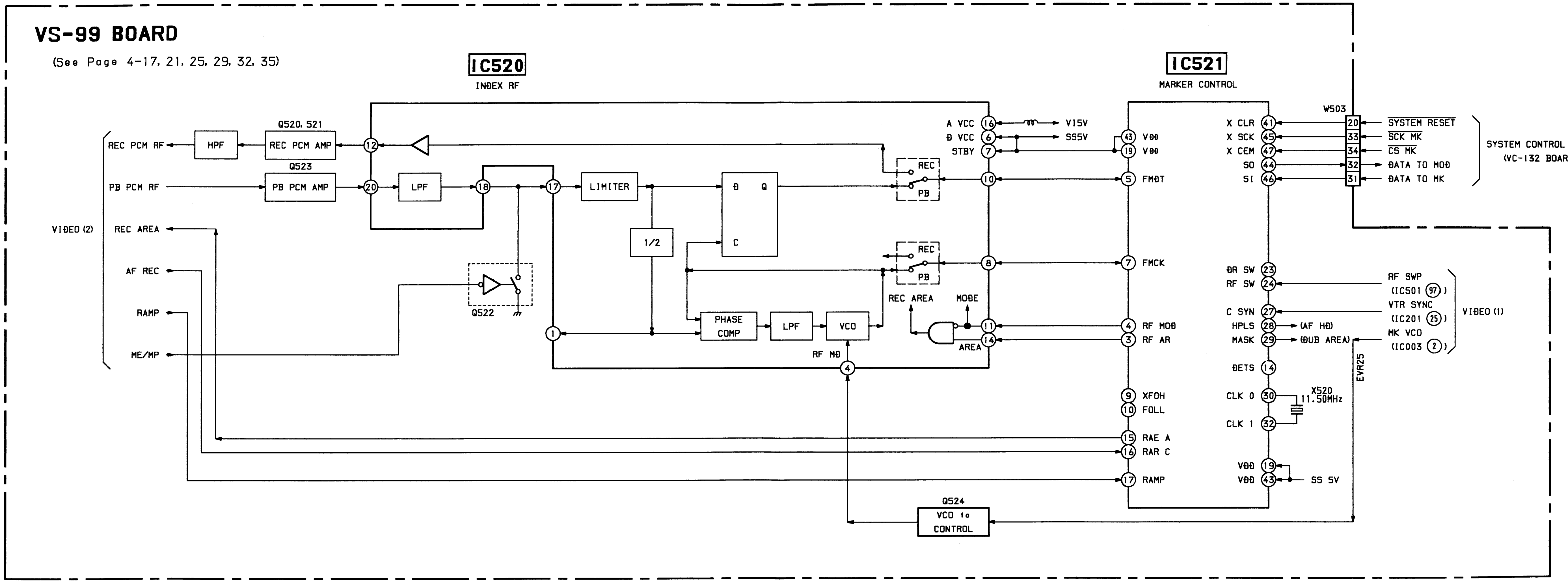
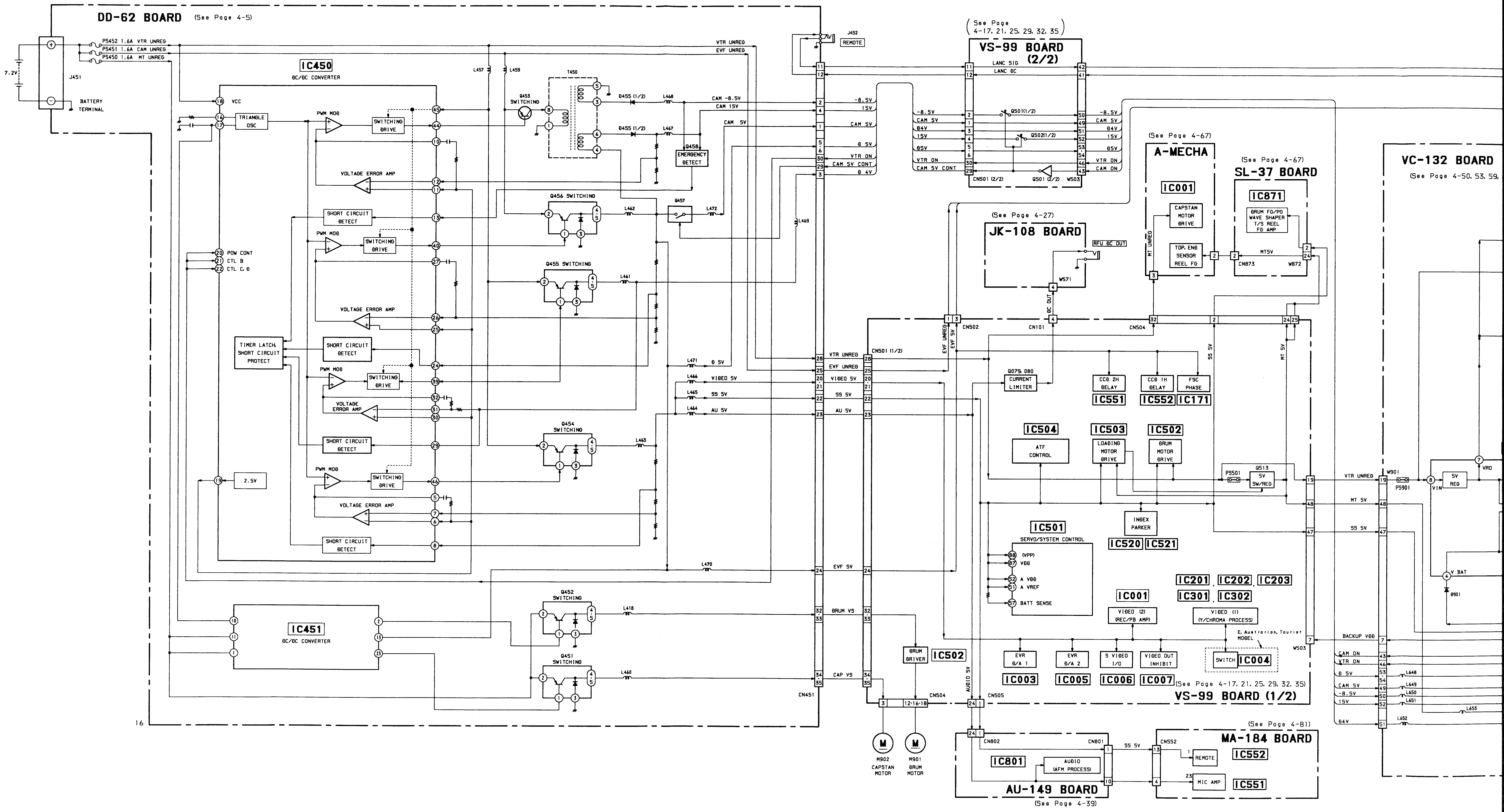

VF-42P BOARD
(See Page 4-76)
SYSCON (VS-99)
TALLY
VIDEO (1) (VS-99)
EVF OUT
CN501
4
3
EVF 5V
D502 (TALLY)
D501 (TALLY)
TALLY
IC501 ⑪
0.8Vp-p
H
IC501
H.V OSC
RV501
H FREQ
⑪ ⑭ ⑮ ⑨ ⑯ ⑬
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC VCC
② ⑫ ⑧ ⑥ ⑦ ⑤ ③ ①
EVF 5V
RV502
V SIZE
RV503
CONTRAST
Q502
VIDEO DRIVE
Q501
VIDEO OUT
2.5Vp-p
IC501 ⑯ REC/PB
Q504
H OUT
C504
H SIZE
2.8Vp-p
IC501 ⑬ REC/PB
2.1Vp-p
V
IC501 ⑤ REC/PB
2.1Vp-p
IC501 ③ REC/PB
T501
FBT
EVF 5V
D503
DUMPER
C509
(-B)
RV504
BRIGHT
W501
G1
H
HV
G2
V901
PICTURE TUBE
10Vp-p
Q501 Ⓔ
L901
DEFLECTION YOKE
CN502
DH2
DH1
EVF 5V
L503
HLC
CN503
DV2
DV1
16

3-12. INDEX BLOCK DIAGRAM


VS-99 BOARD
(See Page 4-17, 21, 25, 29, 32, 35)
IC520
INDEX RF
IC521
MARKER CONTROL
VIDEO (2)
REC PCM RF
PB PCM RF
REC AREA
AF REC
RAMP
ME/MP
HPF
Q520, 521
REC PCM AMP
Q523
PB PCM AMP
LPF
LIMITER
D
Q
C
1/2
Q522
PHASE COMP
LPF
VCO
RF MD
REC
PB
REC AREA
MODE
AREA
A VCC ⑯
D VCC ⑥
STBY ⑦
⑫
⑳
⑱
⑰
①
⑩
⑧
⑪
⑭
④
V15V
SS5V
㊸ VDD
⑲ VDD
⑤ FMDT
⑦ FMCK
④ RF MOD
③ RF AR
⑨ XFOH
⑩ FOLL
⑮ RAE A
⑯ RAR C
⑰ RAMP
X CLR ㊶
X SCK ㊺
X CEM ㊼
SO ㊹
SI ㊻
DR SW ㉓
RF SW ㉔
C SYN ㉗
HPLS ㉘
MASK ㉙
DETS ⑭
CLK 0 ㉚
CLK 1 ㉜
VDD ⑲
VDD ㊸
(AF HD)
(DUB AREA)
X520
11.50MHz
SS 5V
W503
20
33
34
32
31
SYSTEM RESET
SCK MK
CS MK
DATA TO MOD
DATA TO MK
SYSTEM CONTROL
(VC-132 BOARD)
RF SWP
(IC501 (97))
VTR SYNC
(IC201 ㉕)
MK VCO
(IC003 ②)
VIDEO (1)
EVR25
Q524
VCO fo CONTROL

3-13. POWER BLOCK DIAGRAM


DD-62 BOARD (See Page 4-5)
7.2V
J451
BATTERY TERMINAL
PS452 1.6A VTR UNREG
PS451 1.6A CAM UNREG
PS450 1.6A MT UNREG
IC450
DC/DC CONVERTER
VCC
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
SHORT CIRCUIT DETECT
POW CONT
CTL B
CTL C.D
TIMER LATCH. SHORT CIRCUIT PROTECT
2.5V
L457
L459
Q453 SWITCHING
T450
D455 (1/2)
L468
L467
CAM -8.5V
CAM 15V
CAM 5V
EMERGENCY DETECT
Q458
Q456 SWITCHING
Q457
L462
L472
L469
Q455 SWITCHING
L461
L471
L466
L465
L464
D 5V
VIDEO 5V
SS 5V
AU 5V
Q454 SWITCHING
L463
L470
IC451
DC/DC CONVERTER
Q452 SWITCHING
L418
Q451 SWITCHING
L460
VTR UNREG
EVF UNREG
EVF 5V
DRUM VS
CAP VS
CN451
J452
REMOTE
-8.5V
15V
D 4V
VTR ON
CAM 5V CONT
VS-99 BOARD (2/2)
(See Page 4-17, 21, 25, 29, 32, 35)
LANC SIG
LANC DC
Q501(1/2)
Q502(1/2)
CN501 (2/2)
Q501 (2/2)
W503
CAM ON
D5V
A-MECHA
(See Page 4-67)
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
MT UNREG
SL-37 BOARD
IC871
DRUM FG/PG WAVE SHAPER T/S REEL FG AMP
MT5V
CN873
W872
JK-108 BOARD
(See Page 4-27)
RFU DC OUT
W571
DC OUT
CN502
CN101
CN504
EVF UNREG
EVF 5V
SS 5V
MT 5V
CN501 (1/2)
Q079, 080 CURRENT LIMITER
CCD 2H DELAY
CCD 1H DELAY
FSC PHASE
IC551
IC552
IC171
IC504
ATF CONTROL
IC503
LOADING MOTOR DRIVE
IC502
DRUM MOTOR DRIVE
PS501
Q513 5V SW/REG
INDEX PARKER
IC520
IC521
IC501
SERVO/SYSTEM CONTROL
(VPP)
VDD
A VDD
A VREF
BATT SENSE
IC201
IC202
IC203
IC301
IC302
IC001
VIDEO (2) (REC/PB AMP)
VIDEO (1) (Y/CHROMA PROCESS)
E, Australian, Tourist MODEL
SWITCH
IC004
EVR D/A 1
EVR D/A 2
S VIDEO I/O
VIDEO OUT INHIBIT
IC003
IC005
IC006
IC007
VS-99 BOARD (1/2)
(See Page 4-17, 21, 25, 29, 32, 35)
DRUM DRIVER
IC502
AUDIO 5V
CN505
M902 CAPSTAN MOTOR
M901 DRUM MOTOR
AU-149 BOARD
(See Page 4-39)
CN802
CN801
IC801
AUDIO (AFM PROCESS)
MA-184 BOARD
(See Page 4-81)
CN552
REMOTE
MIC AMP
IC552
IC551
VC-132 BOARD
(See Page 4-50, 53, 59,
VTR UNREG
MT 5V
SS 5V
W901
PS901
VIN
5V REG
VRO
V BAT
D901
BACKUP VDD
CAM ON
VTR ON
D 5V
CAM 5V
-8.5V
15V
D4V
L648
L649
L650
L651
L652
L653

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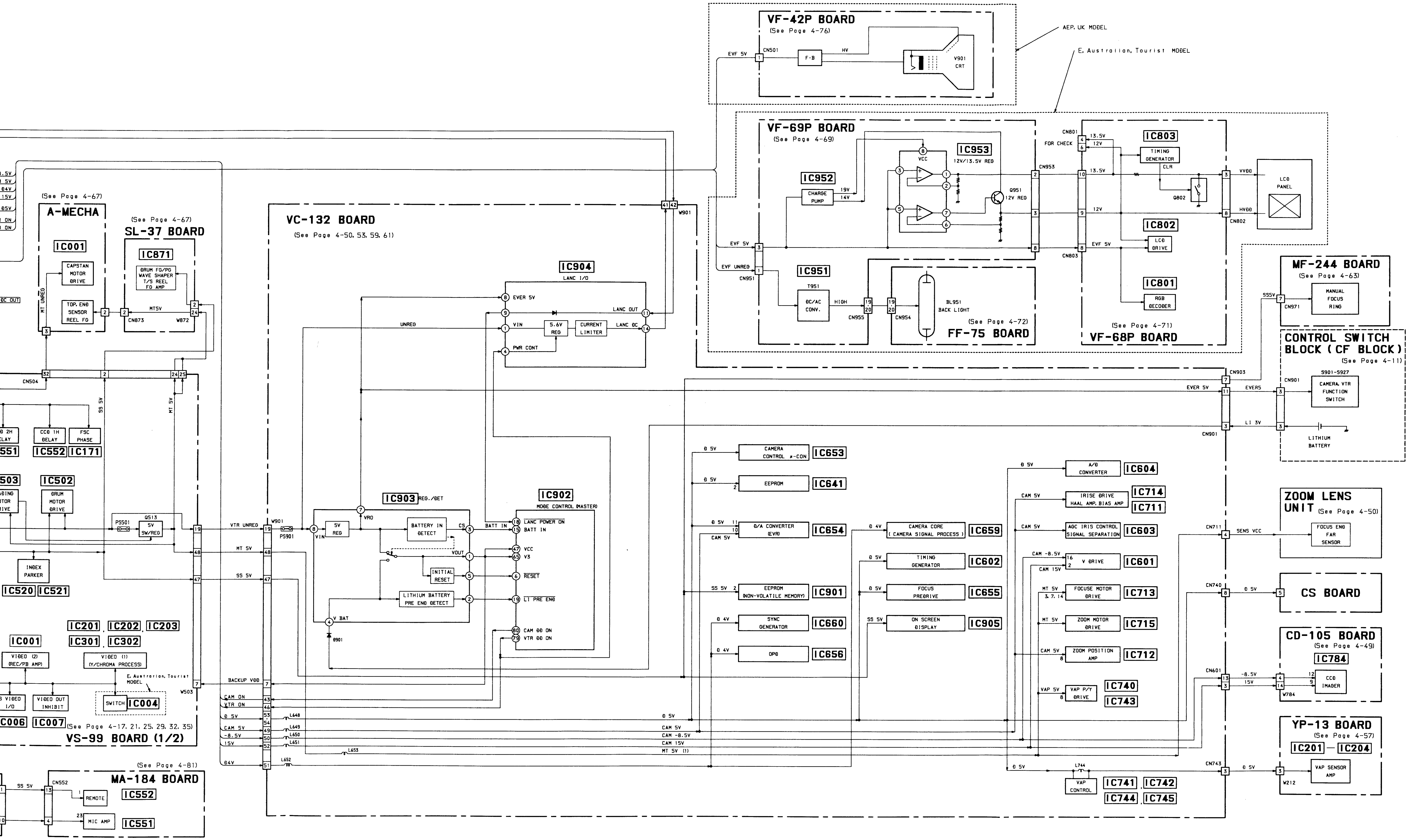
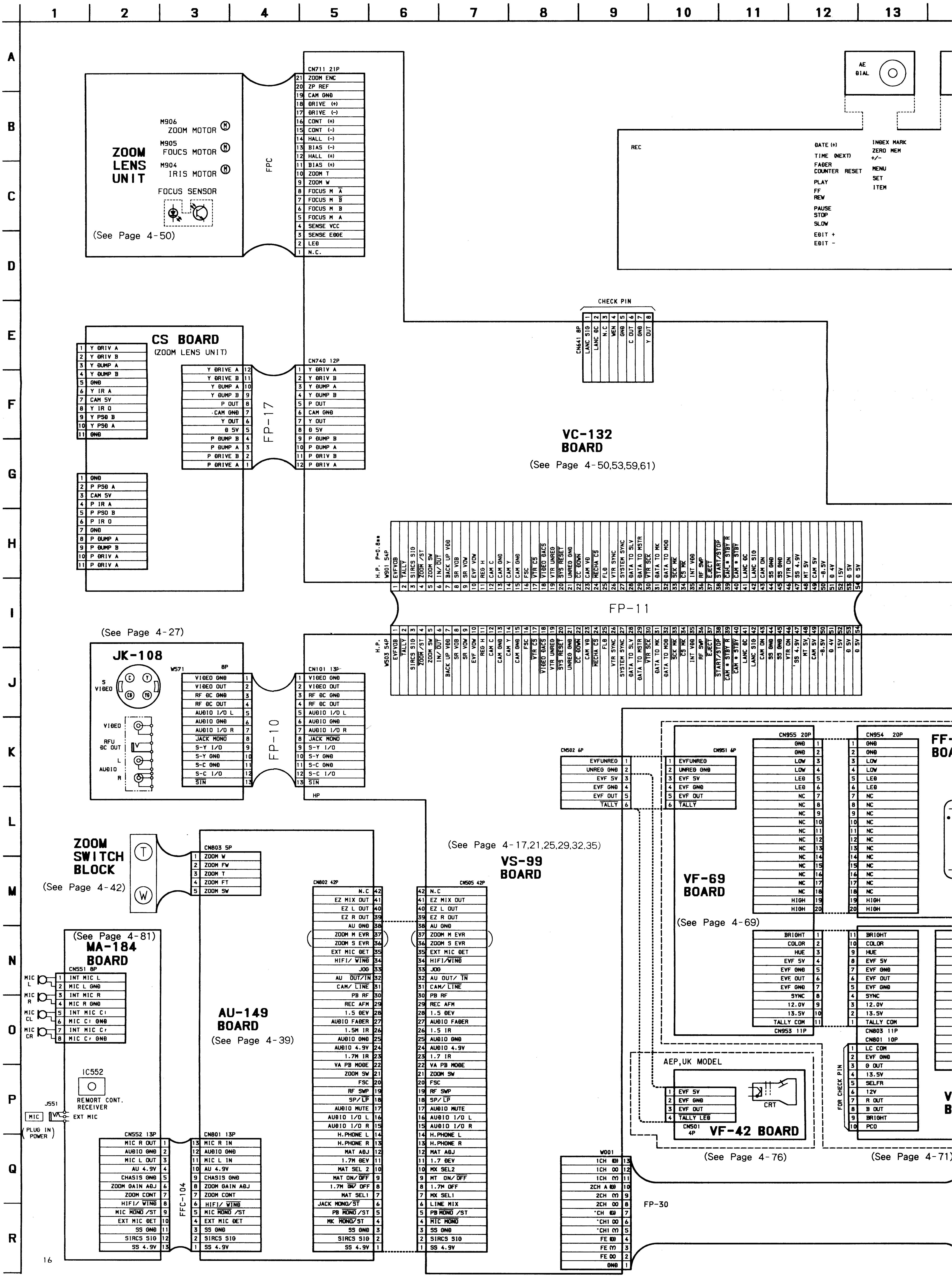
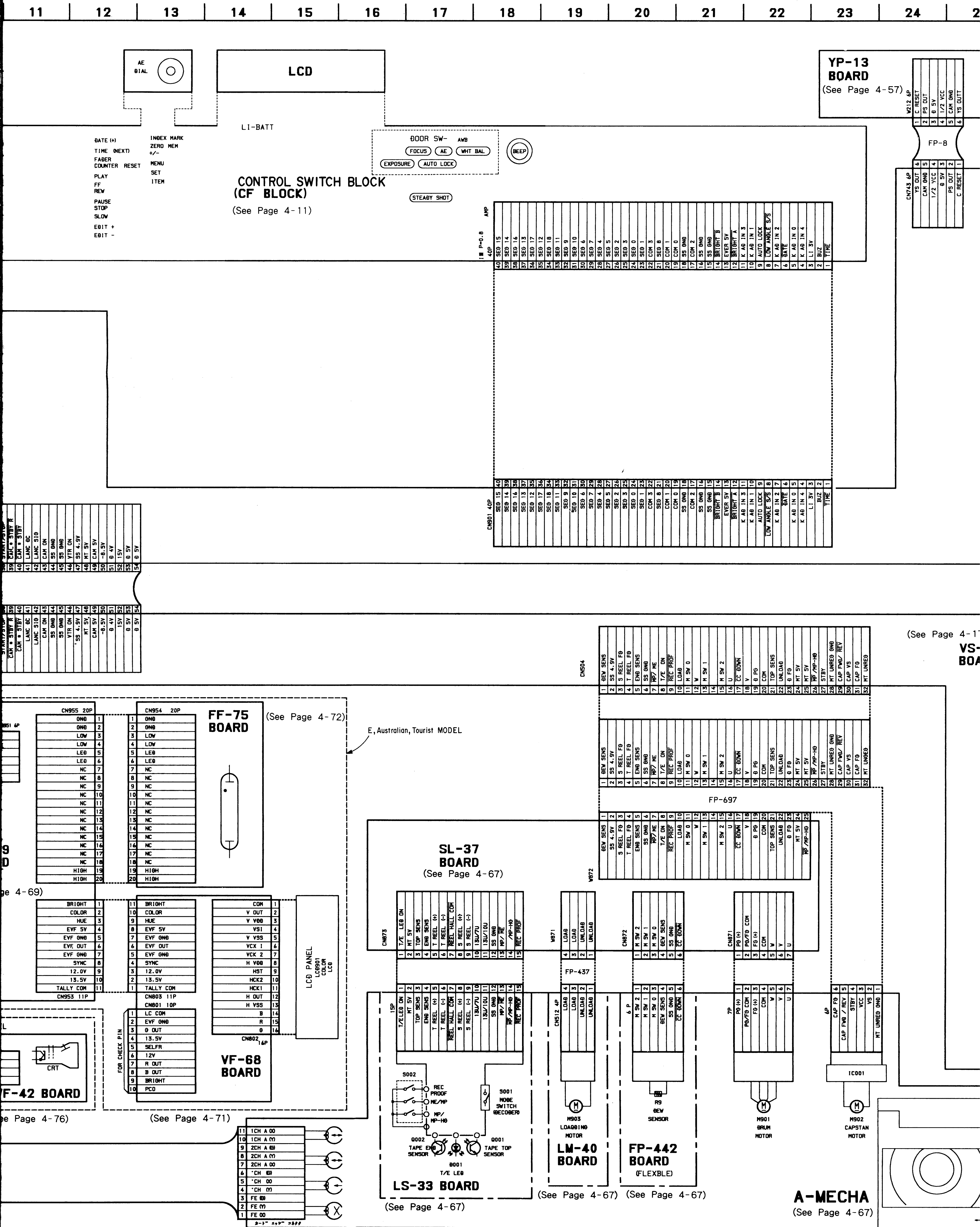

VF-42P BOARD
(See Page 4-76)
AEP, UK MODEL
E, Australian, Tourist MODEL
EVF 5V
CN501
F.B
HV
V901 CRT
VF-69P BOARD
(See Page 4-69)
IC953
12V/13.5V REG
IC952
CHARGE PUMP
19V
14V
VCC
Q951 12V REG
CN953
CN801
FOR CHECK
13.5V
12V
IC803
TIMING GENERATOR
CLR
Q802
VVDD
HVDD
LCD PANEL
CN802
IC802
LCD DRIVE
CN803
EVF 5V
EVF UNREG
CN951
IC951
T951
DC/AC CONV.
HIGH
CN955
CN954
BL951 BACK LIGHT
(See Page 4-72)
FF-75 BOARD
IC801
RGB DECODER
(See Page 4-71)
VF-68P BOARD
MF-244 BOARD
(See Page 4-63)
SS5V
CN971
MANUAL FOCUS RING
CONTROL SWITCH BLOCK (CF BLOCK)
(See Page 4-11)
S901-S927
CN901
CAMERA, VTR FUNCTION SWITCH
EVER5
LI 3V
LITHIUM BATTERY
CN903
EVER 5V
CN901
(See Page 4-67)
A-MECHA
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
MT UNREG
(See Page 4-67)
SL-37 BOARD
IC871
DRUM FG/PG WAVE SHAPER T/S REEL FG AMP
MT5V
CN873
W872
CN504
SS 5V
MT 5V
VC-132 BOARD
(See Page 4-50, 53, 59, 61)
W901
IC904
LANC I/O
EVER 5V
LANC OUT
UNREG
VIN
5.6V REG
CURRENT LIMITER
LANC DC
PWR CONT
IC903
REG./DET
VRD
5V REG
BATTERY IN DETECT
CS
VOUT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
V BAT
D901
IC902
MODE CONTROL (MASTER)
LANC POWER ON
BATT IN
VCC
V3
RESET
LI PRE END
CAM DD ON
VTR DD ON
PS501
Q513
5V SW/REG
VTR UNREG
PS901
MT 5V
SS 5V
BACKUP VDD
CAM ON
VTR ON
D 5V
CAM 5V
-8.5V
15V
D4V
L648
L649
L650
L651
L653
L652
W503
CAM 5V
CAM -8.5V
CAM 15V
MT 5V (1)
D 2H DELAY
CCD 1H DELAY
FSC PHASE
IC551
IC552
IC171
IC503
IC502
LOADING MOTOR DRIVE
DRUM MOTOR DRIVE
INDEX PARKER
IC520
IC521
IC201
IC202
IC203
IC001
IC301
IC302
VIDEO (2) (REC/PB AMP)
VIDEO (1) (Y/CHROMA PROCESS)
E, Australian, Tourist MODEL
S VIDEO I/O
VIDEO OUT INHIBIT
SWITCH
IC004
IC006
IC007
(See Page 4-17, 21, 25, 29, 32, 35)
VS-99 BOARD (1/2)
(See Page 4-81)
MA-184 BOARD
CN552
SS 5V
REMOTE
IC552
MIC AMP
IC551
D 5V
CAMERA CONTROL µ-CON
IC653
EEPROM
IC641
D/A CONVERTER (EVR)
IC654
CAM 5V
D 4V
CAMERA CORE (CAMERA SIGNAL PROCESS)
IC659
TIMING GENERATOR
IC602
SS 5V
EEPROM (NON-VOLATILE MEMORY)
IC901
FOCUS PREDRIVE
IC655
SYNC GENERATOR
IC660
ON SCREEN DISPLAY
IC905
DPB
IC656
A/D CONVERTER
IC604
IRISE DRIVE HAAL AMP, BIAS AMP
IC714
IC711
AGC IRIS CONTROL SIGNAL SEPARATION
IC603
CAM -8.5V
CAM 15V
V DRIVE
IC601
FOCUSE MOTOR DRIVE
IC713
ZOOM MOTOR DRIVE
IC715
ZOOM POSITION AMP
IC712
VAP 5V
VAP P/Y DRIVE
IC740
IC743
L744
VAP CONTROL
IC741
IC742
IC744
IC745
CN711
SENS VCC
ZOOM LENS UNIT (See Page 4-50)
FOCUS END FAR SENSOR
CN740
CS BOARD
CN601
CD-105 BOARD
(See Page 4-49)
IC784
CCD IMAGER
W784
YP-13 BOARD
(See Page 4-57)
IC201 – IC204
CN743
VAP SENSOR AMP
W212

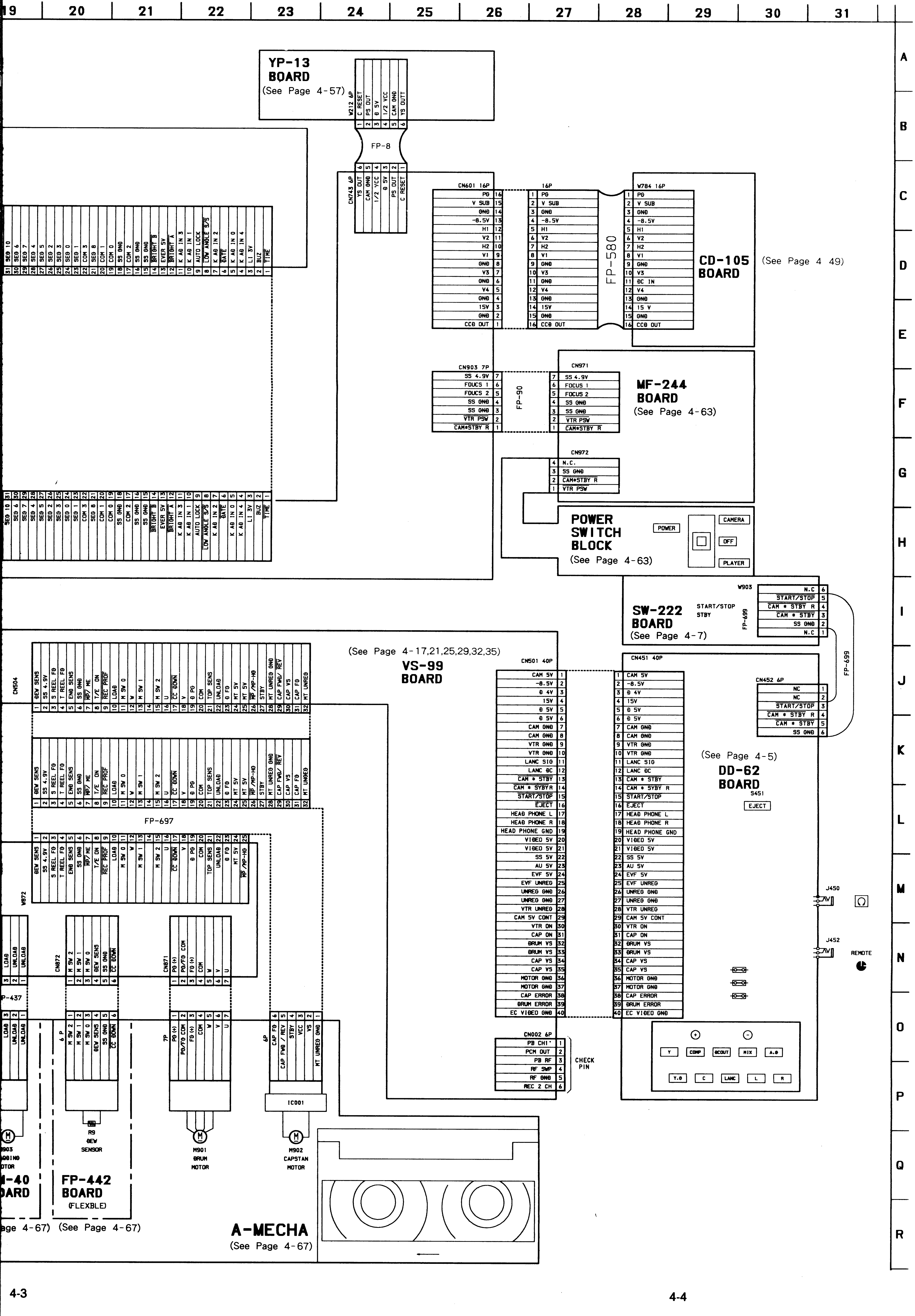
SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


ZOOM LENS UNIT
M906 ZOOM MOTOR
M905 FOUCS MOTOR
M904 IRIS MOTOR
FOCUS SENSOR
(See Page 4-50)
FPC
CN711 21P
CS BOARD
(ZOOM LENS UNIT)
FP-17
CN740 12P
CHECK PIN
CN641 8P
VC-132 BOARD
(See Page 4-50,53,59,61)
W501 54P
FP-11
W503 54P
(See Page 4-27)
JK-108
W571 8P
FP-10
CN101 13P
S VIDEO
VIDEO
RFU DC OUT
AUDIO
ZOOM SWITCH BLOCK
(See Page 4-42)
CN803 5P
(See Page 4-17,21,25,29,32,35)
VS-99 BOARD
CN502 6P
CN951 6P
CN955 20P
CN954 20P
VF-69 BOARD
(See Page 4-69)
CN953 11P
CN803 11P
CN801 10P
AEP,UK MODEL
CRT
CN501 4P
VF-42 BOARD
(See Page 4-76)
(See Page 4-71)
FOR CHECK PIN
(See Page 4-81)
MA-184 BOARD
CN551 8P
IC552
REMORT CONT. RECEIVER
J551
EXT MIC
PLUG IN POWER
CN552 13P
FFC-104
CN801 13P
AU-149 BOARD
(See Page 4-39)
CN802 42P
CN505 42P
W001
FP-30
AE DIAL
REC
DATE (+)
TIME (NEXT)
FADER
COUNTER RESET
PLAY
FF
REW
PAUSE
STOP
SLOW
EDIT +
EDIT -
INDEX MARK
ZERO MEM
+/-
MENU
SET
ITEM
16


11
12
13
14
15
16
17
18
19
20
21
22
23
24
AE DIAL
LCD
LI-BATT
DATE (+)
TIME (NEXT)
FADER
COUNTER RESET
PLAY
FF
REW
PAUSE
STOP
SLOW
EDIT +
EDIT -
INDEX MARK
ZERO MEM
+/-
MENU
SET
ITEM
DOOR SW-
AWB
FOCUS
AE
WHT BAL
BEEP
EXPOSURE
AUTO LOCK
STEADY SHOT
CONTROL SWITCH BLOCK
(CF BLOCK)
(See Page 4-11)
YP-13
BOARD
(See Page 4-57)
FP-8
CN901 40P
(See Page 4-72)
FF-75
BOARD
E, Australian, Tourist MODEL
CN955 20P
CN954 20P
CN953 11P
CN803 11P
CN801 10P
CN802 16P
LCD PANEL
LCD901
COLOR
LCD
FOR CHECK PIN
VF-68
BOARD
(See Page 4-71)
CRT
VF-42 BOARD
(See Page 4-76)
(See Page 4-69)
CN504
FP-697
SL-37
BOARD
(See Page 4-67)
CN873
W871
CN872
CN871
W872
FP-437
CN512 4P
S002
REC PROOF
ME/MP
MP/MP-HG
S001
MODE SWITCH (ENCODER)
Q002
TAPE END SENSOR
Q001
TAPE TOP SENSOR
D001
T/E LED
LS-33 BOARD
(See Page 4-67)
M903
LOADING MOTOR
LM-40
BOARD
(See Page 4-67)
R9
DEW SENSOR
FP-442
BOARD
(FLEXBLE)
(See Page 4-67)
M901
DRUM MOTOR
M902
CAPSTAN MOTOR
IC001
A-MECHA
(See Page 4-67)
(See Page 4-1
VS-
BOA

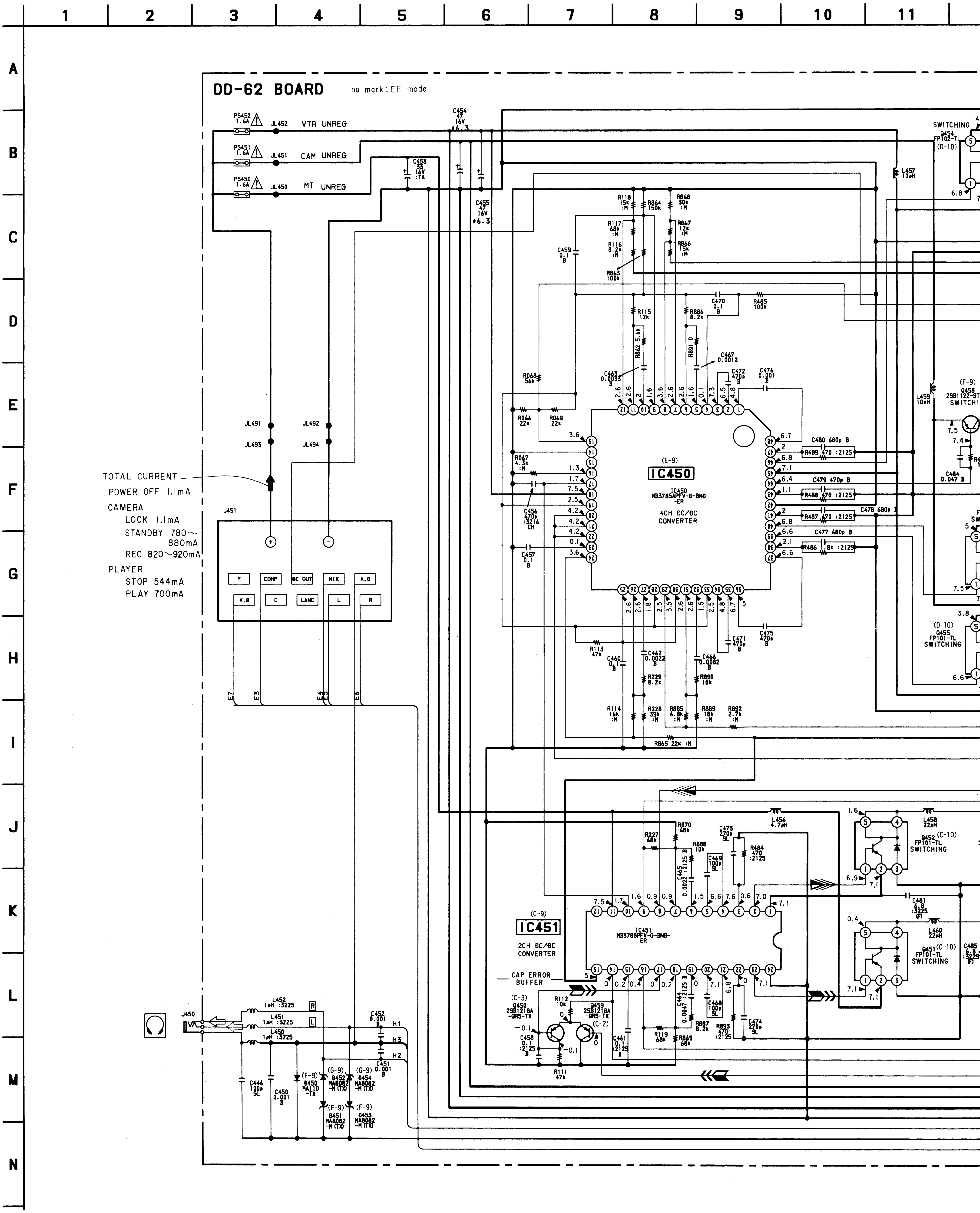

YP-13 BOARD
(See Page 4-57)
W212 6P
C RESET
PS OUT
B 5V
1/2 VCC
CAM GND
YS OUTT
FP-8
CN743 6P
CN601 16P
FP-580
W784 16P
CD-105 BOARD
(See Page 4 49)
CN903 7P
FP-90
CN971
MF-244 BOARD
(See Page 4-63)
CN972
POWER SWITCH BLOCK
(See Page 4-63)
POWER
CAMERA
OFF
PLAYER
W903
SW-222 BOARD
(See Page 4-7)
START/STOP
STBY
FP-699
CN504
VS-99 BOARD
(See Page 4-17,21,25,29,32,35)
CN501 40P
CN451 40P
CN452 6P
DD-62 BOARD
(See Page 4-5)
S451
EJECT
FP-697
W872
CN872
CN871
J450
J452
REMOTE
CN002 6P
CHECK PIN
PB CH1
PCM OUT
PB RF
RF SWP
RF GND
REC 2 CH
Y
COMP
BCOUT
MIX
A.B
Y.B
C
LANC
L
R
IC001
M903
R9 BEW SENSOR
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
FP-442 BOARD
(FLEXBLE)
(See Page 4-67)
A-MECHA
(See Page 4-67)

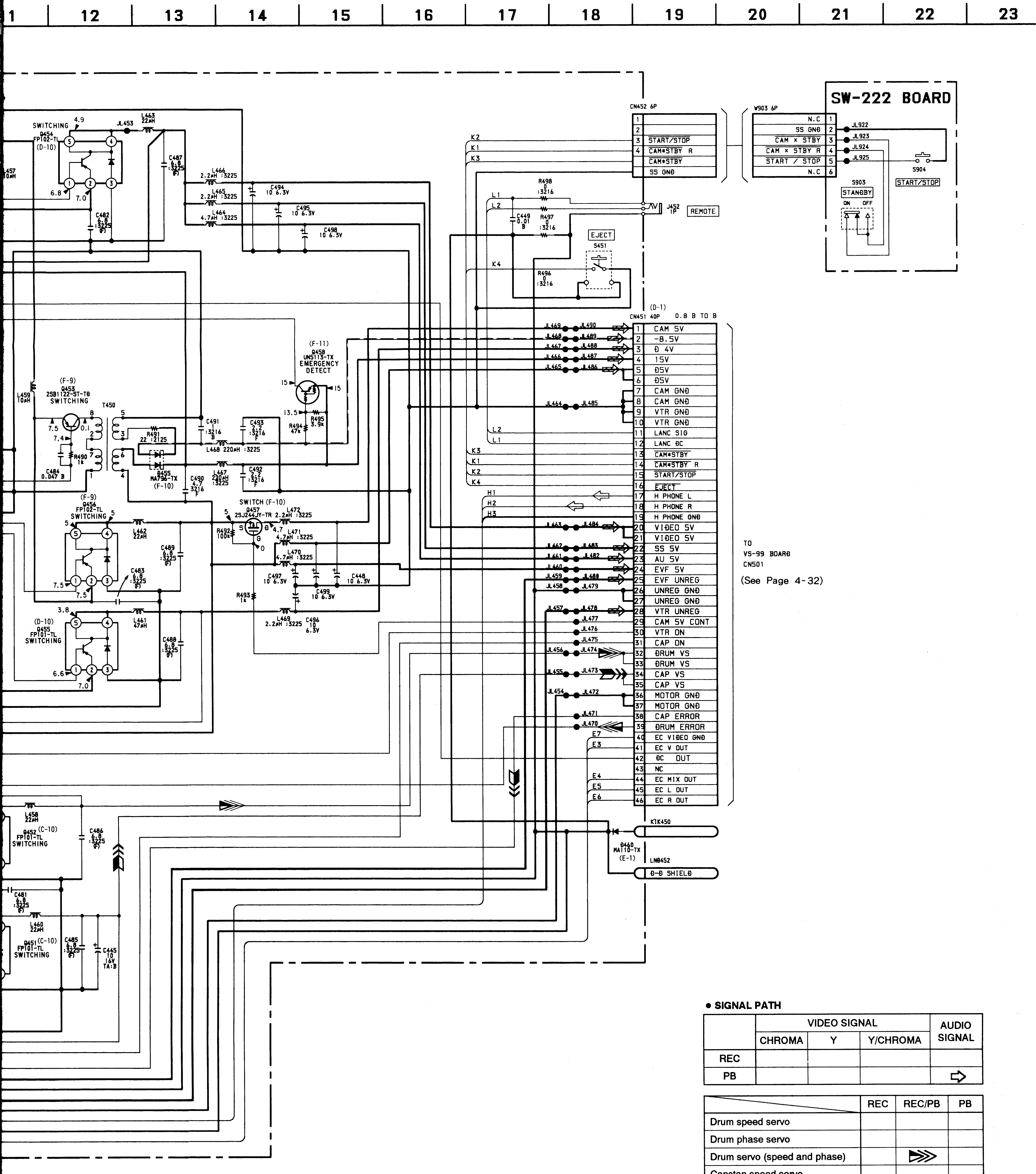
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

http://www.manualscenter.com

DD-62 (DC-DC CONVERTER), SW-222 (STANDBY, START/STOP SWITCH) SCHEMATIC DIAGRAM

– Ref. No. DD-62 BOARD: 1,000 Series, SW-222 BOARD: 2,000 Series –

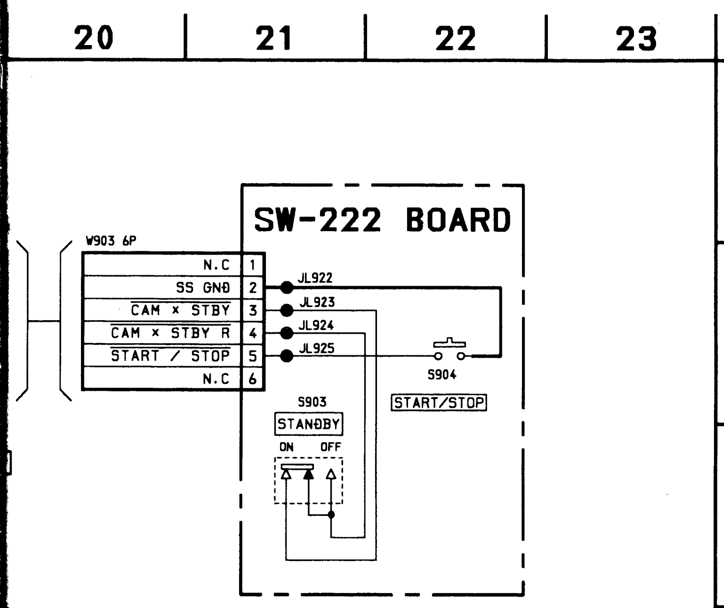

1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
DD-62 BOARD
no mark : EE mode
PS452 1.6A
JL452
VTR UNREG
PS451 1.6A
JL451
CAM UNREG
PS450 1.6A
JL450
MT UNREG
C453 33 16V :TA
C454 47 16V
C455 47 16V
C459 0.1 B
SWITCHING
Q454 FP102-TL (D-10)
L457 10µH
R118 15k :M
R864 150k
R868 30k :M
R117 68k :M
R867 12k :M
R116 8.2k :M
R866 15k :M
R863 100k
C470 0.1 B
R485 100k
R115 12k
R886 8.2k
R862 5.6k
R891 0
C467 0.0012
C472 470p B
C476 0.001 B
C463 0.0033 B
R068 56k
R066 22k
R069 22k
R067 4.3k :M
C456 470p :3216 CH
C457 0.1 B
(E-9)
IC450
IC450 MB3785APFV-G-BND-ER
4CH DC/DC CONVERTER
C480 680p B
R489 470 :2125
C479 470p B
R488 470 :2125
R487 470 :2125
C478 680p
C477 680p B
R486 1.8k :2125
L459 10µH
(F-9) Q453 2SB1122-ST SWITCHING
C484 0.047 B
(D-10) Q455 FP101-TL SWITCHING
R113 47k
C460 0.1 B
C462 0.0022 B
C466 0.0082 B
C471 470p B
C475 470p B
R229 8.2k
R890 10k
R114 16k :M
R228 39k :M
R885 6.8k :M
R889 18k :M
R892 2.7k :M
R865 22k :M
TOTAL CURRENT
POWER OFF 1.1mA
CAMERA
LOCK 1.1mA
STANDBY 780～880mA
REC 820～920mA
PLAYER
STOP 544mA
PLAY 700mA
JL491
JL493
JL492
JL494
J451
Y
COMP
DC OUT
MIX
A.G
V.G
C
LANC
L
R
E7
E3
E4
E5
E6
L456 4.7µH
R870 68k
R227 68k
C473 270p SL
R888 10k
C469 100p SL
R484 470 :2125
C445 0.0022 :2125 B
L458 22µH
Q452 FP101-TL SWITCHING (C-10)
C481 6.8 :3225
L460 22µH
Q451 FP101-TL SWITCHING (C-10)
C485 6.8 :3225
(C-9)
IC451
2CH DC/DC CONVERTER
IC451 MB3788PFV-G-BND-ER
CAP ERROR BUFFER
(C-3) Q450 2SB1218A -QRS-TX
R112 10k
Q459 2SB1218A -QRS-TX (C-2)
C458 0.1 :2125 B
R111 47k
C461 0.1 :2125
R119 68k
R869 68k
C444 0.0047 :2125 B
C468 100p SL
R887 8.2k
R893 470 :2125
C474 270p SL
J450
L452 1µH :3225
L451 1µH :3225
L450 1µH :3225
C452 0.001 B
C451 0.001 B
H1
H2
H3
C446 100p SL
C450 0.001 B
(F-9) D450 MA110-TX
(G-9) D452 MA8082 -M (TX)
(G-9) D454 MA8082 -M (TX)
(F-9) D451 MA8082 -M (TX)
(F-9) D453 MA8082 -M (TX)


1
12
13
14
15
16
17
18
19
20
21
22
23
SW-222 BOARD
CN452 6P
START/STOP
CAM*STBY R
CAM*STBY
SS GND
W903 6P
N.C
SS GND
CAM × STBY
CAM × STBY R
START / STOP
N.C
JL922
JL923
JL924
JL925
S904
START/STOP
S903
STANDBY
ON
OFF
REMOTE
J452 1P
EJECT
S451
R498
R497
R496
C449
K1
K2
K3
K4
L1
L2
H1
H2
H3
E3
E4
E5
E6
E7
SWITCHING
Q454 FP102-TL
(D-10)
L463 22μH
JL453
C487
L466 2.2μH :3225
L465 2.2μH :3225
L464 4.7μH :3225
C494 10 6.3V
C495 10 6.3V
C498 10 6.3V
C482
(F-11)
Q458 UN5113-TX
EMERGENCY DETECT
R494 47k
R495 3.9k
(F-9)
Q453 2SB1122-ST-TB
SWITCHING
L459 10μH
T450
R491 22 :2125
R490 1k
C484 0.047 B
Q455 MA796-TX (F-10)
C490 4.7 :3216 F
L467 220μH :3225
C491 1 :3216 B
C493 2.2 :3216 F
L468 220μH :3225
C492 2.2 :3216 F
(F-9)
Q456 FP102-TL
SWITCHING
L462 22μH
C489 6.8 :3225 (F)
C483 6.8 :3225 (F)
SWITCH (F-10)
Q457 2SJ244JY-TR
L472 2.2μH :3225
R492 100k
L471 4.7μH :3225
L470 4.7μH :3225
C497 10 6.3V
C448 10 6.3V
C499 10 6.3V
R493 1k
L469 2.2μH :3225
C496 10 6.3V
(D-10)
Q455 FP101-TL
SWITCHING
L461 47μH
C488 6.8 :3225 (F)
(D-1)
CN451 40P 0.8 B TO B
1 CAM 5V
2 -8.5V
3 D 4V
4 15V
5 D5V
6 D5V
7 CAM GND
8 CAM GND
9 VTR GND
10 VTR GND
11 LANC SIG
12 LANC DC
13 CAM*STBY
14 CAM*STBY R
15 START/STOP
16 EJECT
17 H PHONE L
18 H PHONE R
19 H PHONE GND
20 VIDEO 5V
21 VIDEO 5V
22 SS 5V
23 AU 5V
24 EVF 5V
25 EVF UNREG
26 UNREG GND
27 UNREG GND
28 VTR UNREG
29 CAM 5V CONT
30 VTR ON
31 CAP ON
32 DRUM VS
33 DRUM VS
34 CAP VS
35 CAP VS
36 MOTOR GND
37 MOTOR GND
38 CAP ERROR
39 DRUM ERROR
40 EC VIDEO GND
41 EC V OUT
42 DC OUT
43 NC
44 EC MIX OUT
45 EC L OUT
46 EC R OUT
TO VS-99 BOARD CN501
(See Page 4-32)
K1K450
Q460 MA110-TX (E-1)
LN0452
D-D SHIELD
L458 22μH
Q452 (C-10) FP101-TL SWITCHING
C486 6.8 :3225 (F)
C481 6.8 :3225 (F)
L460 22μH
Q451 (C-10) FP101-TL SWITCHING
C485 6.8 :3225 (F)
C445 10 16V TA:B

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⋙	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⋙	
Ref. signal			


20
21
22
23
SW-222 BOARD
W903 6P
N.C 1
SS GND 2
CAM x STBY 3
CAM x STBY R 4
START / STOP 5
N.C 6
JL922
JL923
JL924
JL925
S904
START/STOP
S903
STANDBY
ON
OFF

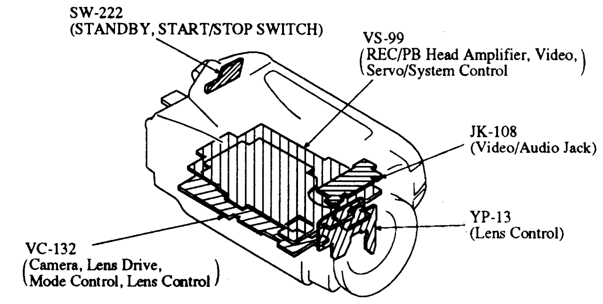
TO
VS-99 BOARD
CN501

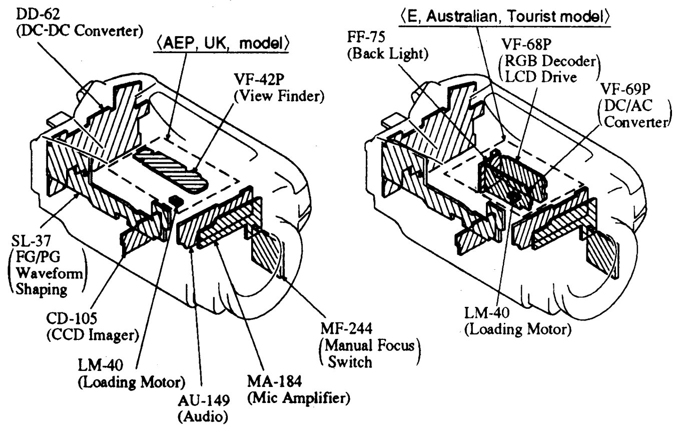
(See Page 4-32)

IGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				⇨

	REC	REC/PB	PB
um speed servo			
um phase servo			
um servo (speed and phase)		⋙	
apstan speed servo			
apstan phase servo			
apstan servo (speed and phase)		⋙	
ef. signal			


SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)


DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)
⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder LCD Drive)
VF-69P
(DC/AC Converter)
LM-40
(Loading Motor)

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○—— : indicated a lead wire mounted on the component side.
- ——— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristic.
- ● :Through hole is omitted.
- Printed wiring board which has four layers structure but inner two layers' patternd are omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the pattern face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistor are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000 Ω , MΩ : 1000k Ω .
- All capacitors are in μF unless otherwise noted. pF: μ μF .
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- —▭— : nonflammable resistor.
- —∿— : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- ▬▬ : B+ Line.
- – – – : B- Line.
- ⇨ : IN/OUT direction of (+, −) B LINE.
- Circled numbers refer to waveforms.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

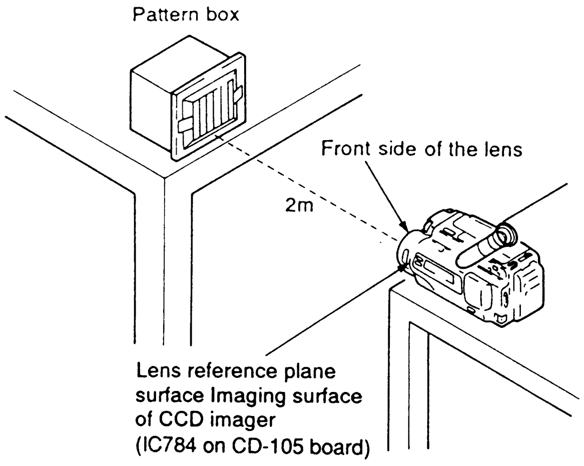
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage and waveform.**

(CAMERA, REC mode)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10M Ω).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Front side of the lens
2m
Lens reference plane surface Imaging surface of CCD imager
(IC784 on CD-105 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

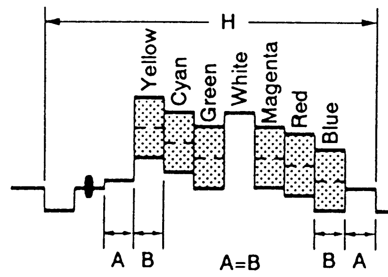

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform)

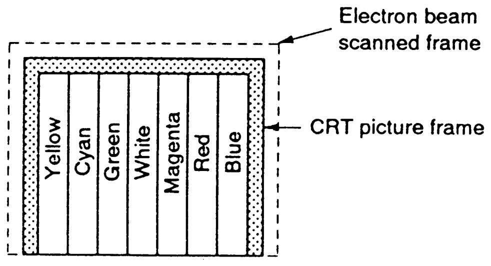

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. (Picture on monitor TV)

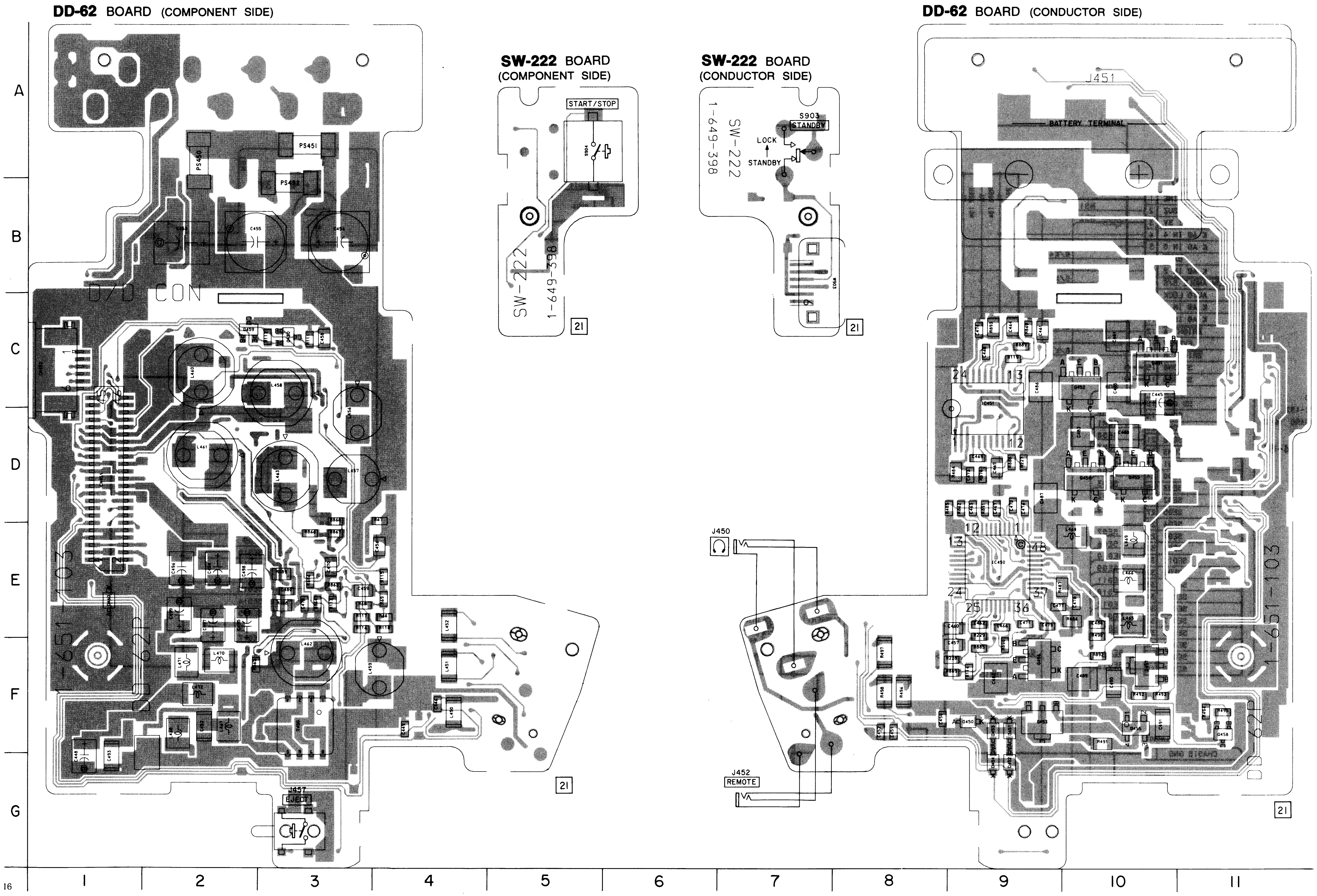
(VTR REC, VTR PB mode)

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC 10M Ω).
- Voltage variations may be noted due to normal production tolerances.

Note: Refer to page 7-49 "3-1-3. How to set the REC mode in the model . Without REC switch. " in VIDEO SECTION ADJUSTMENTS.

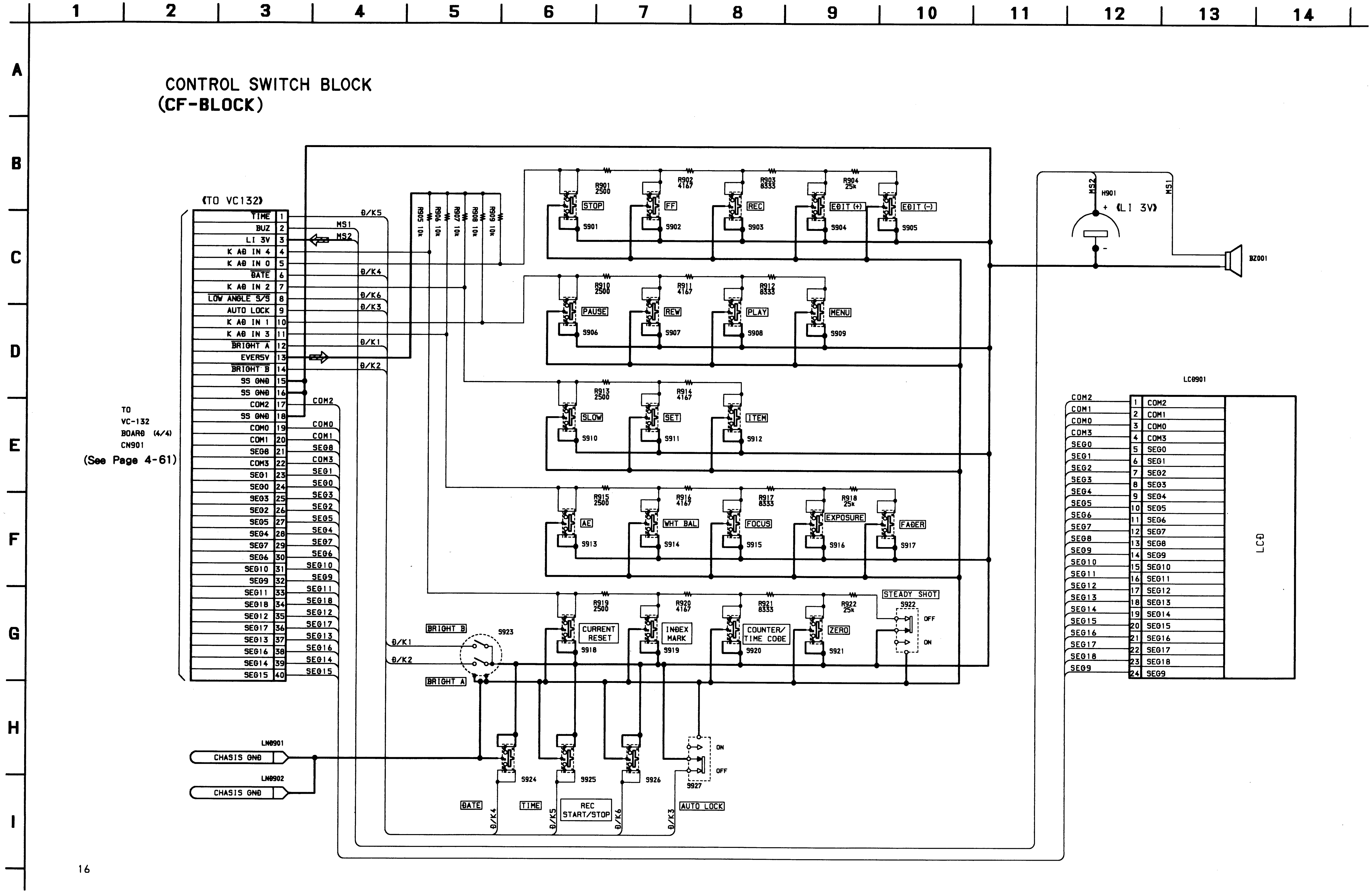
DD-62 (DC-DC CONVERTER), SW-222 (STANDBY, START/STOP SWITCH) PRINTED WIRING BOARD

– Ref. No. DD-62 BOARD: 1,000 Series, SW-222 BOARD: 2,000 Series –


DD-62 BOARD (COMPONENT SIDE)
SW-222 BOARD (COMPONENT SIDE)
SW-222 BOARD (CONDUCTOR SIDE)
DD-62 BOARD (CONDUCTOR SIDE)
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
11
PS451
PS452
PS450
C455
C454
D70 CON
L460
L458
L461
L463
L457
L462
L459
L470
L451
L452
1-651-103
J457
EJECT
START/STOP
S904
SW-222
1-649-398
S903
STANDBY
LOCK
STANDBY
J450
J452
REMOTE
J451
BATTERY TERMINAL
IC451
IC450
24
13
1
12
48
25
36
37
C445
C489
R491
R497
R498
D450
A
K
B
C
E
21

CF BLOCK (CAMERA FUNCTION SWITCH) SCHEMATIC DIAGRAM

- CONTROL SWITCH BLOCK (CF block) is replaced as brock, so that there PRINTED WIRING BOARD are omitted.


1
2
3
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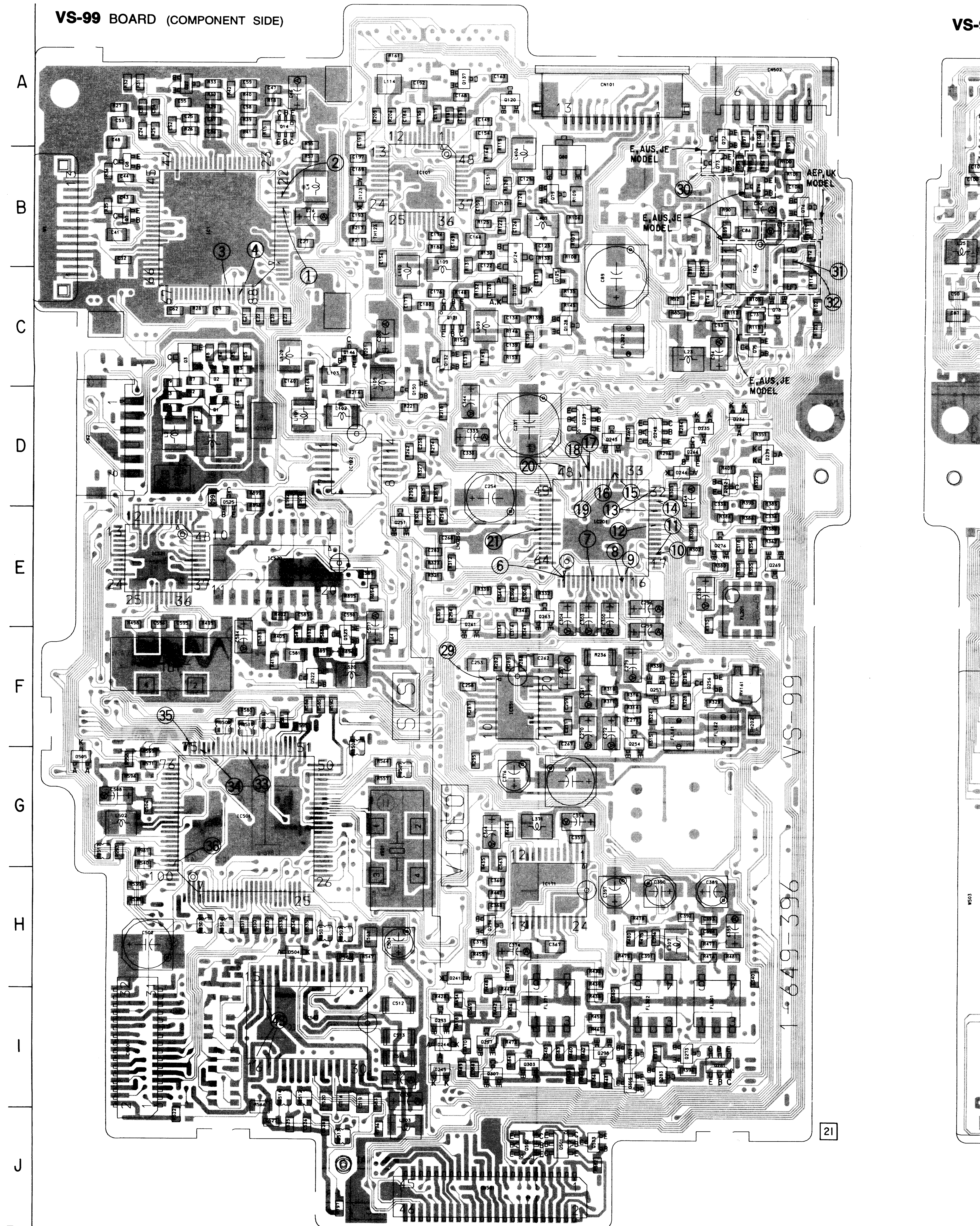
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
CONTROL SWITCH BLOCK
(CF-BLOCK)
(TO VC132)
TO
VC-132
BOARD (4/4)
CN901
(See Page 4-61)
TIME 1
BUZ 2
LI 3V 3
K AD IN 4 4
K AD IN 0 5
DATE 6
K AD IN 2 7
LOW ANGLE S/S 8
AUTO LOCK 9
K AD IN 1 10
K AD IN 3 11
BRIGHT A 12
EVERSV 13
BRIGHT B 14
SS GND 15
SS GND 16
COM2 17
SS GND 18
COM0 19
COM1 20
SEG8 21
COM3 22
SEG1 23
SEG0 24
SEG3 25
SEG2 26
SEG5 27
SEG4 28
SEG7 29
SEG6 30
SEG10 31
SEG9 32
SEG11 33
SEG18 34
SEG12 35
SEG17 36
SEG13 37
SEG16 38
SEG14 39
SEG15 40
MS1
MS2
D/K5
D/K4
D/K6
D/K3
D/K1
D/K2
R905 10k
R906 10k
R907 10k
R908 10k
R909 10k
R901 2500
R902 4167
R903 8333
R904 25k
STOP
FF
REC
EDIT (+)
EDIT (−)
S901
S902
S903
S904
S905
R910 2500
R911 4167
R912 8333
PAUSE
REW
PLAY
MENU
S906
S907
S908
S909
R913 2500
R914 4167
SLOW
SET
ITEM
S910
S911
S912
R915 2500
R916 4167
R917 8333
R918 25k
AE
WHT BAL
FOCUS
EXPOSURE
FADER
S913
S914
S915
S916
S917
R919 2500
R920 4167
R921 8333
R922 25k
CURRENT RESET
INDEX MARK
COUNTER/ TIME CODE
ZERO
STEADY SHOT
S922
OFF
ON
S918
S919
S920
S921
BRIGHT B
S923
BRIGHT A
D/K1
D/K2
LND901
CHASIS GND
LND902
CHASIS GND
S924
S925
S926
S927
ON
OFF
DATE
TIME
REC START/STOP
AUTO LOCK
D/K4
D/K5
D/K6
D/K3
MS2
H901
MS1
+ (LI 3V)
−
BZ001
LCD901
COM2
COM1
COM0
COM3
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
SEG16
SEG17
SEG18
SEG9
1 COM2
2 COM1
3 COM0
4 COM3
5 SEG0
6 SEG1
7 SEG2
8 SEG3
9 SEG4
10 SEG5
11 SEG6
12 SEG7
13 SEG8
14 SEG9
15 SEG10
16 SEG11
17 SEG12
18 SEG13
19 SEG14
20 SEG15
21 SEG16
22 SEG17
23 SEG18
24 SEG9
LCD
16

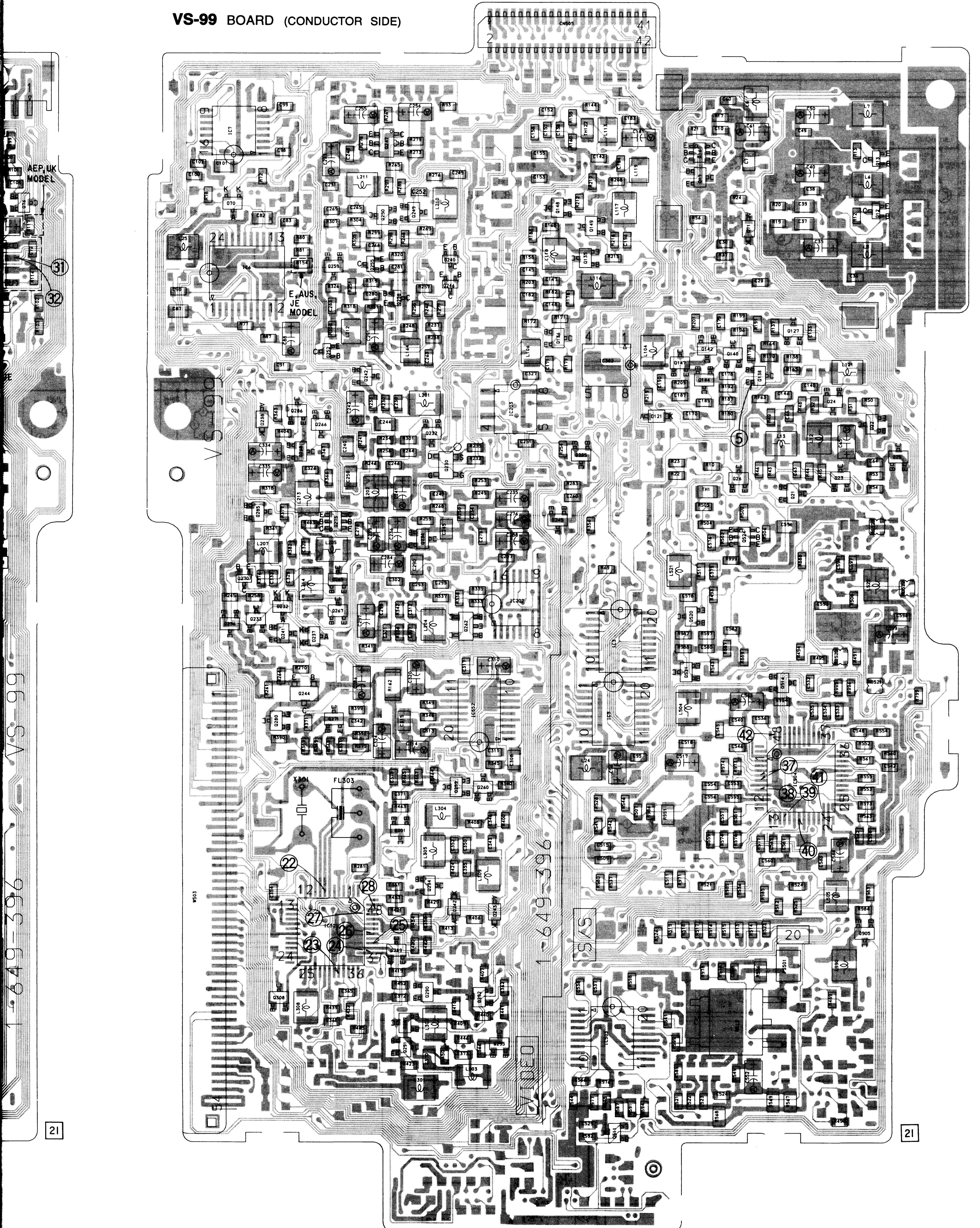
VS-99 (REC/PB HEAD AMPLIFIER, VIDEO, SERVO/SYSTEM CONTROL), JK-108 (VIDEO/AUDIO JACK) PRINTED WIRING BOARD

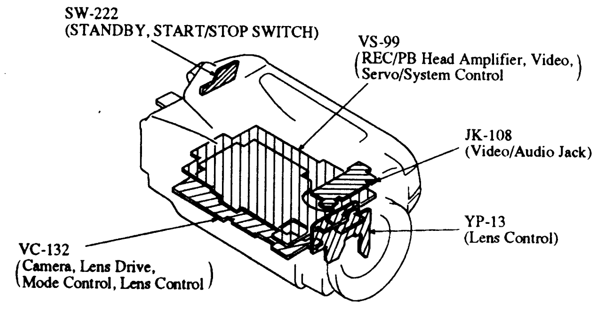
– Ref. No. VS-99 BOARD: 3,000 Series, JK-108 BOARD: 4,000 Series –

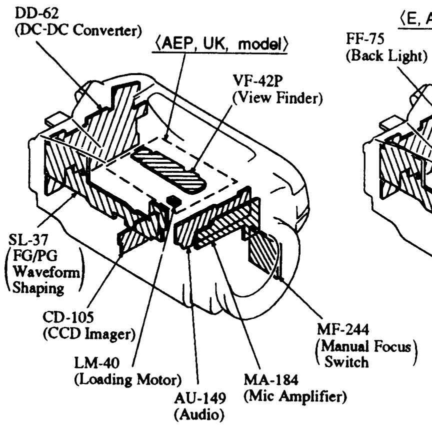
VS-99 BOARD (COMPONENT SIDE)

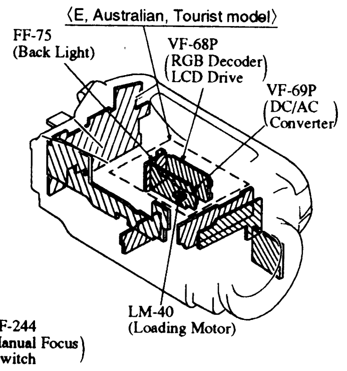

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
E,AUS,JE MODEL
AEP,UK MODEL
E,AUS,JE MODEL
E,AUS,JE MODEL
CN101
CN502
IC101
IC102
IC201
IC251
IC171
IC501
IC530
IC4
C89
C237
C254
C499
C502
VIDEO
S/S
VS-99
1-649-396-
21
VS-

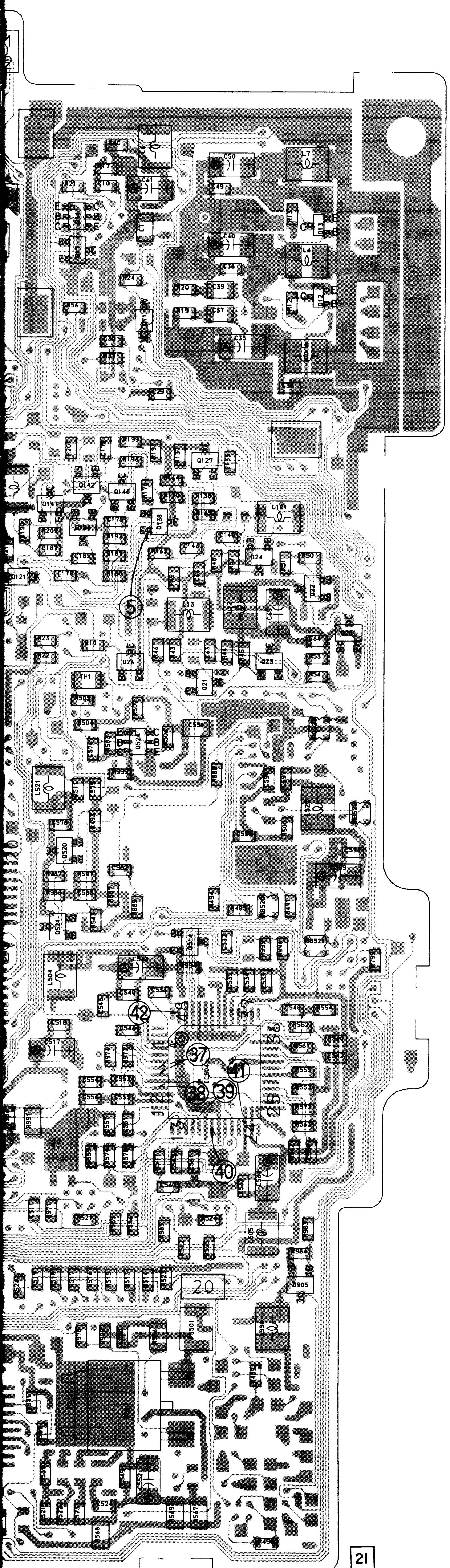
VS-99 BOARD (CONDUCTOR SIDE)


CN505
1
2
41
42
AEP,UK MODEL
E,AUS, JE MODEL
IC7
IC6
IC203
IC202
IC452
IC3
IC504
IC501
IC301
X301
FL303
1-649-396
VS-99
21
7
8
9
10
11
12
13
14
15

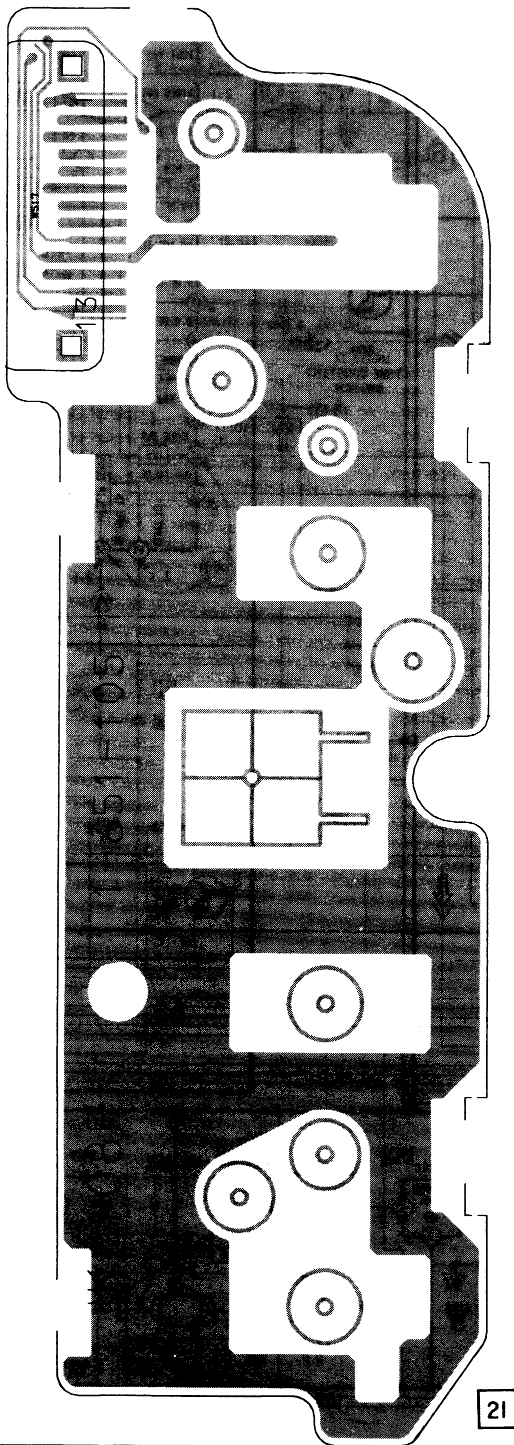

SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)


DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)

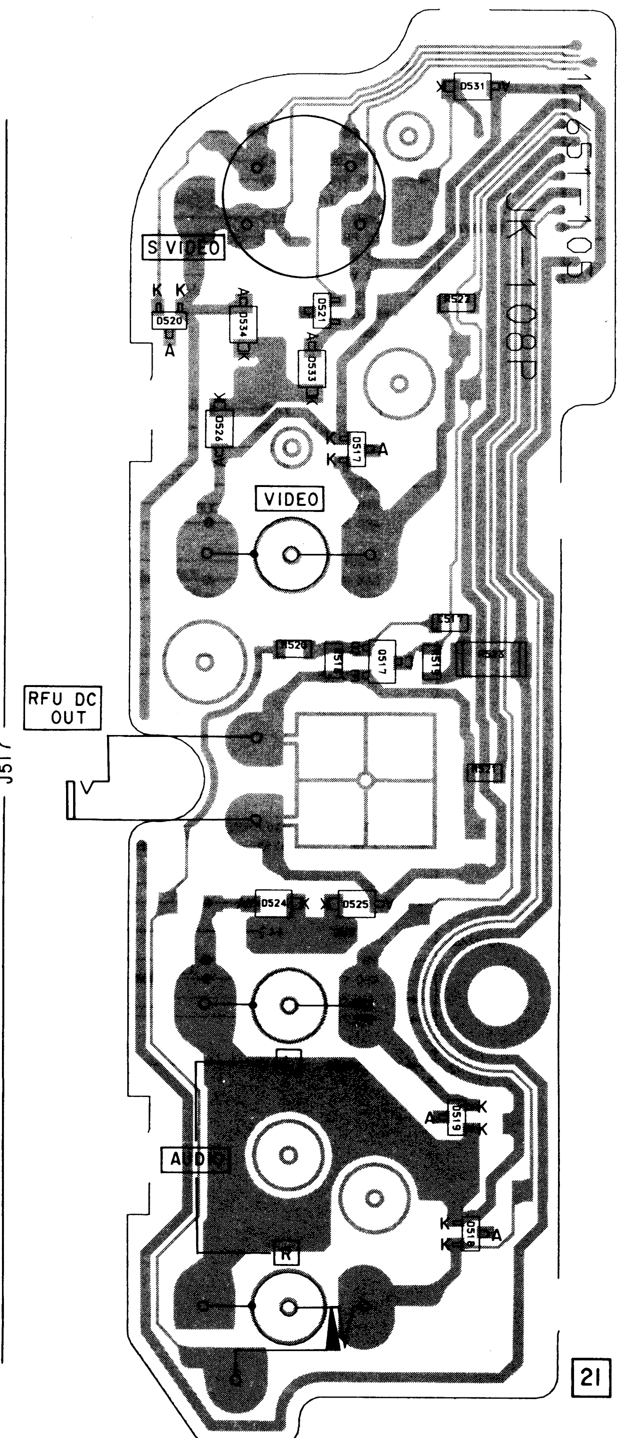

⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder LCD Drive)
VF-69P
(DC/AC Converter)
LM-40
(Loading Motor)


5
42
37
41
38
39
40
20
21

JK-108 BOARD (COMPONENT SIDE)



JK-108 BOARD (CONDUCTOR SIDE)


S VIDEO
VIDEO
AUDIO
RFU DC OUT
J517
JK-108P
1-651-105
21

13
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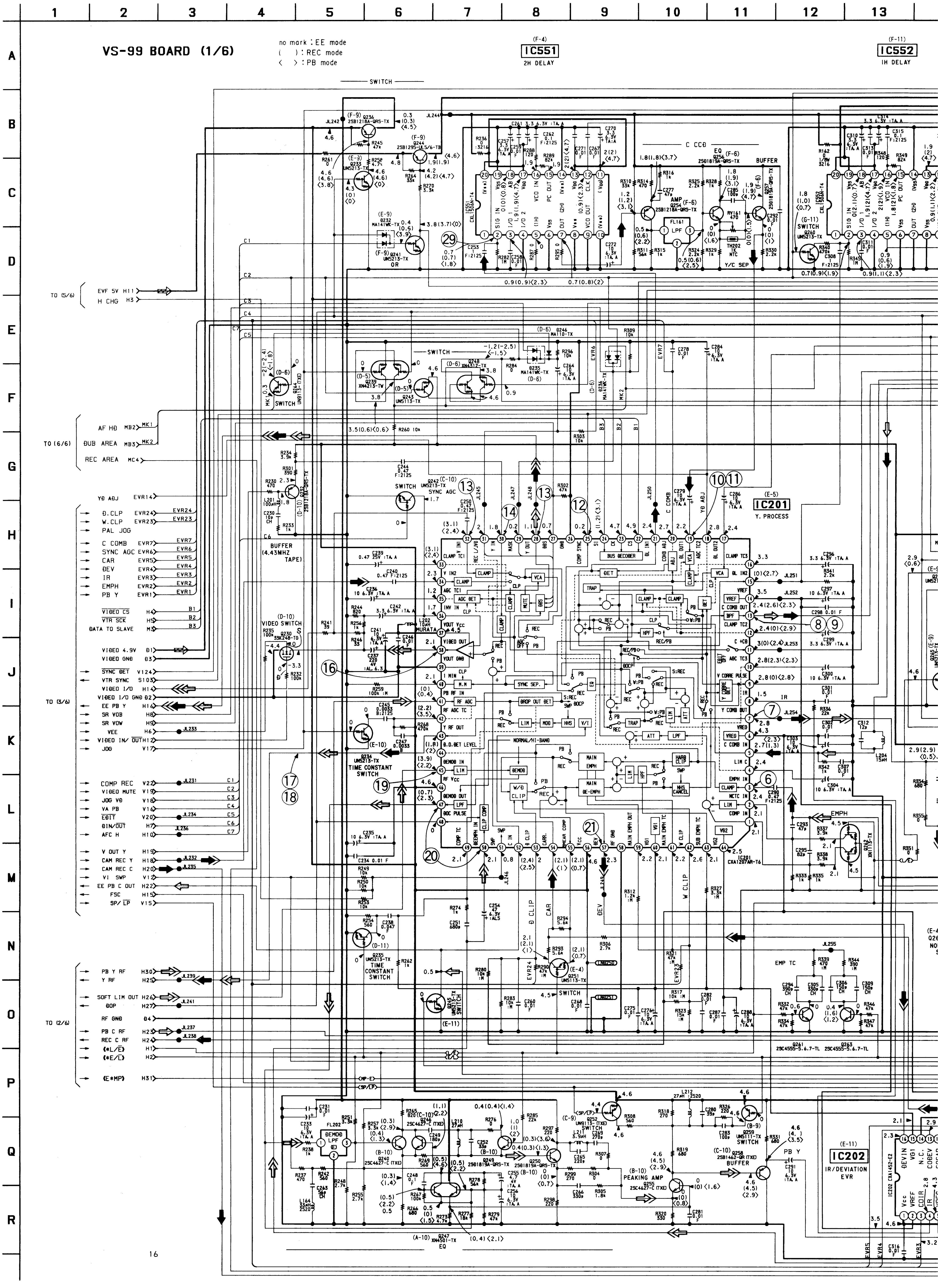
19

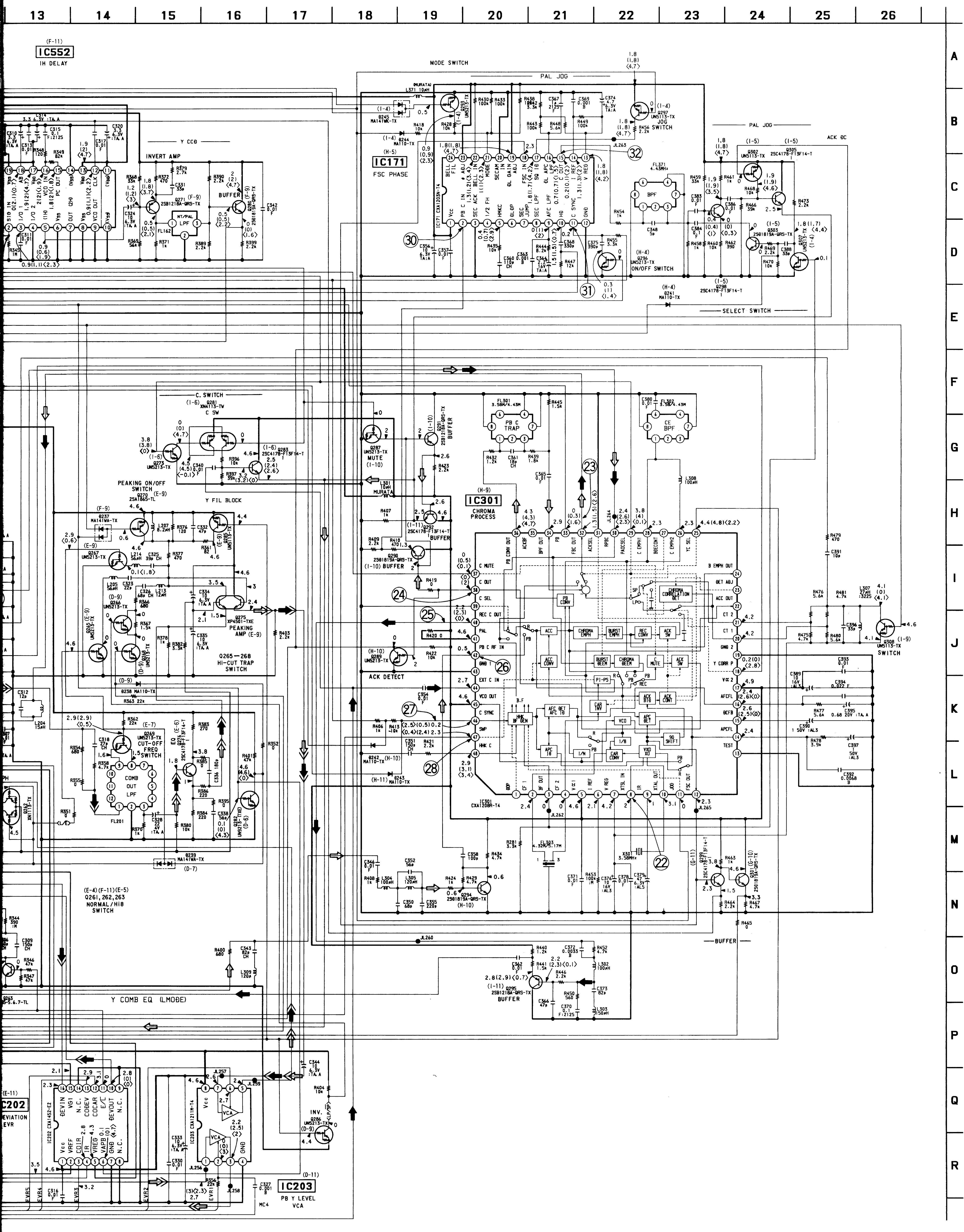
VS-99 (VIDEO) SCHEMATIC DIAGRAM

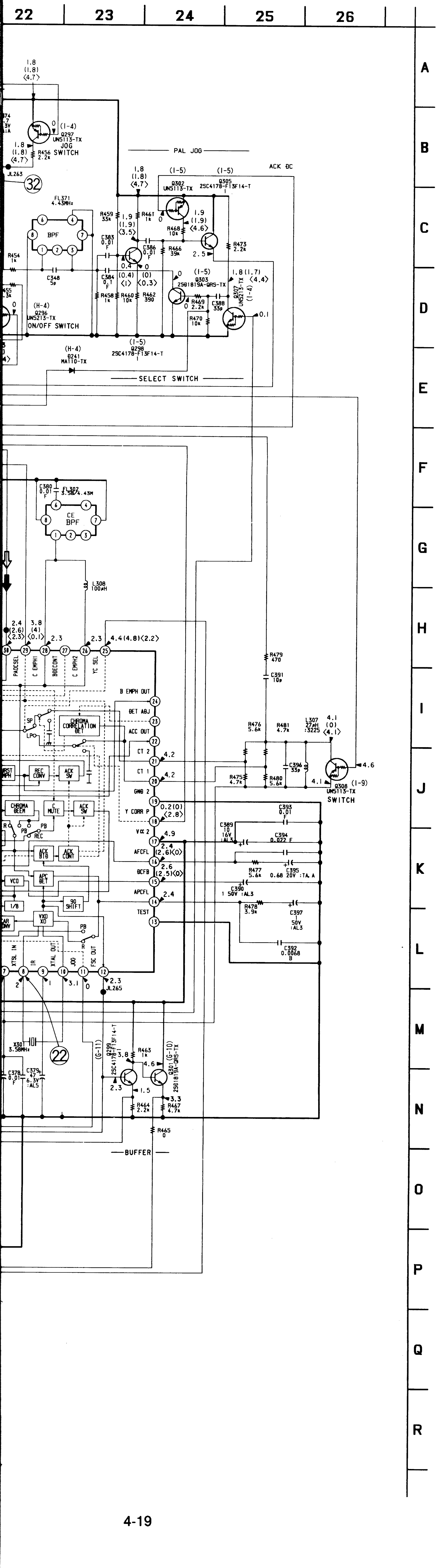
• See page 4-13 for Printed wiring board.

http://www.manualscenter.com

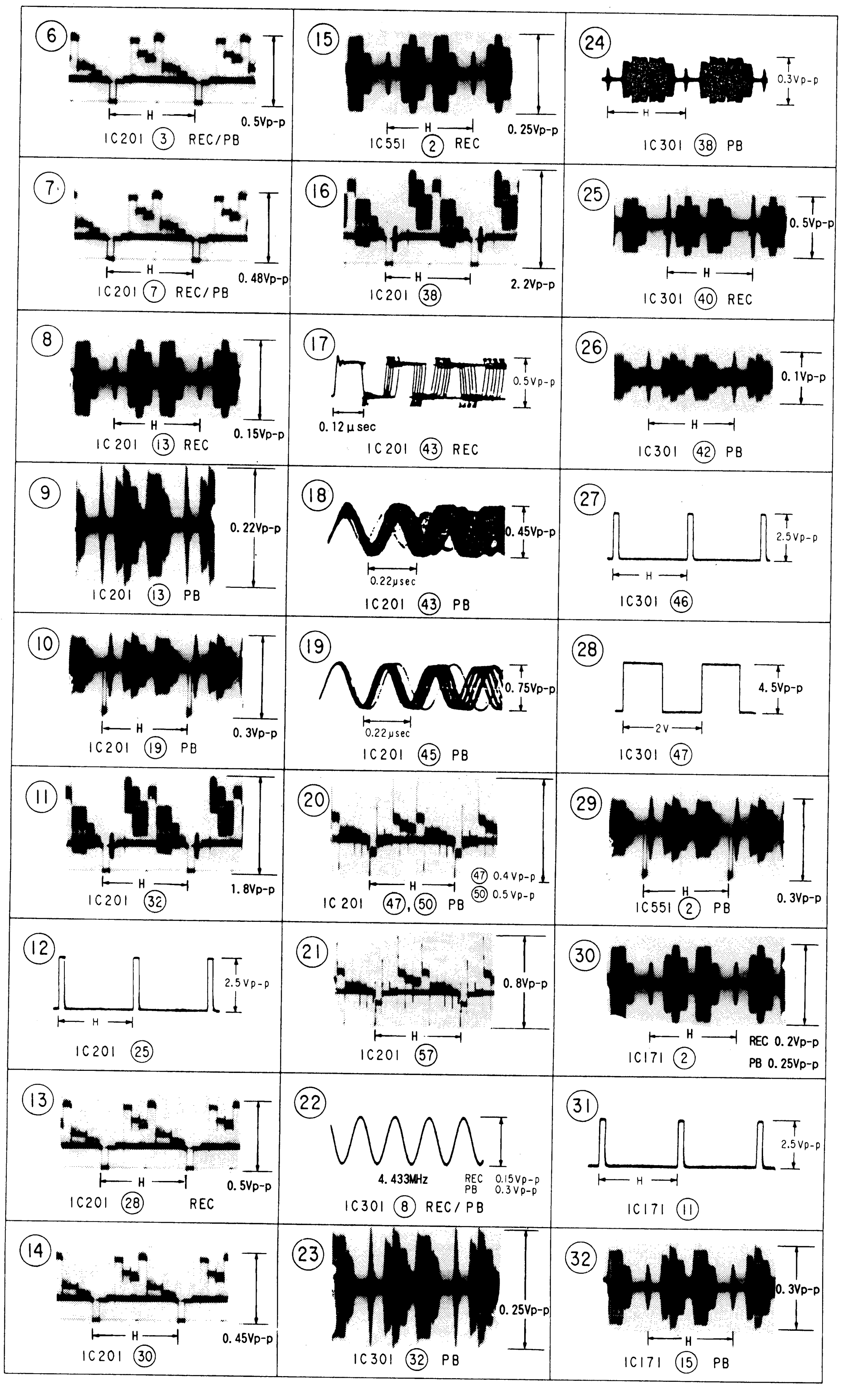
– Ref. No. VS-99 BOARD: 3,000 Series –


VS-99 BOARD (1/6)
no mark : EE mode
( ) : REC mode
〈 〉 : PB mode
(F-4) IC551 2H DELAY
(F-11) IC552 1H DELAY
SWITCH
C CCD
AMP
BUFFER
LPF
Y/C SEP
IC201 Y. PROCESS
IC202 IR/DEVIATION EVR
TO (5/6)
EVF 5V H11
H CHG H3
TO (6/6)
AF HD MB2
DUB AREA MB3
REC AREA MC4
YO ADJ EVR14
D.CLP EVR24
W.CLP EVR23
PAL JOG
C COMB EVR7
SYNC AGC EVR6
CAR EVR5
DEV EVR4
IR EVR3
EMPH EVR2
PB Y EVR1
VIDEO CS H4
VTR SCK H5
DATA TO SLAVE M3
TO (3/6)
VIDEO 4.9V D1
VIDEO GND D3
SYNC DET V124
VTR SYNC S103
VIDEO I/O H14
VIDEO I/O GND D2
EE PB Y H16
SR VOB H8
SR VOW H9
VEE H6
VIDEO IN/OUT H12
JOG V17
COMP REC V22
VIDEO MUTE V19
JOG VO V18
VA PB V16
EDIT V20
OIN/OUT H7
AFC H H10
V OUT Y H19
CAM REC Y H18
CAM REC C H20
VI SWP V12
EE PB C OUT H22
FSC H15
SP/LP V15
TO (2/6)
PB Y RF H30
Y RF H25
SOFT LIM OUT H26
DOP H27
RF GND D4
PB C RF H23
REC C RF H24
(*L/E) H1
(*E/L) H2
(E*MP) H31
VIDEO SWITCH
BUFFER (4.43MHZ TAPE)
SYNC AGC
TIME CONSTANT SWITCH
MURATA
CLAMP
VCA
MUTE
AGC DET
VIDEO OUT
SYNC SEP.
RF AGC
DROP OUT DET
NORMAL/HI-BAND
DEMOD
W/D CLIP
MAIN EMPH
MAIN DE-EMPH
HARD CLIP
NHS CANCEL
BUS DECODER
TRAP
HPF
ATT
EMPH
EMP TC
D CLIP
CAR
DEV
W CLIP
PEAKING AMP
EQ
DEMOD LPF
IC201 CXA1207AR-T6
Q261 2SC4555-5.6.7-TL
Q263 2SC4555-5.6.7-TL
16


13
14
15
16
17
18
19
20
21
22
23
24
25
26
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
(F-11)
IC552
1H DELAY
MODE SWITCH
PAL JOG
JOG SWITCH
Y CCD
INVERT AMP
BUFFER
NT/PAL LPF
(H-5)
IC171
FSC PHASE
IC171 CXA1203N-T4
ON/OFF SWITCH
SELECT SWITCH
ACK 0C
BPF
C. SWITCH
C SW
MUTE
BUFFER
PB C TRAP
CE BPF
PEAKING ON/OFF SWITCH
Y FIL BLOCK
(H-9)
IC301
CHROMA PROCESS
PEAKING AMP (E-9)
Q265—268 HI-CUT TRAP SWITCH
ACK DETECT
CUT-OFF FREQ SWITCH
COMB OUT LPF
IC301 CXA1208R-T4
(E-4)(F-11)(E-5) Q261,262,263 NORMAL/Hi8 SWITCH
BUFFER
Y COMB EQ (LMODE)
(E-11)
IC202
DEVIATION EVR
IC202 CXA1452-E2
IC203 CXA1211M-T4
INV.
(D-11)
IC203
PB Y LEVEL VCA
SWITCH
(30)
(31)
(32)
(23)
(24)
(25)
(26)
(27)
(28)
(22)

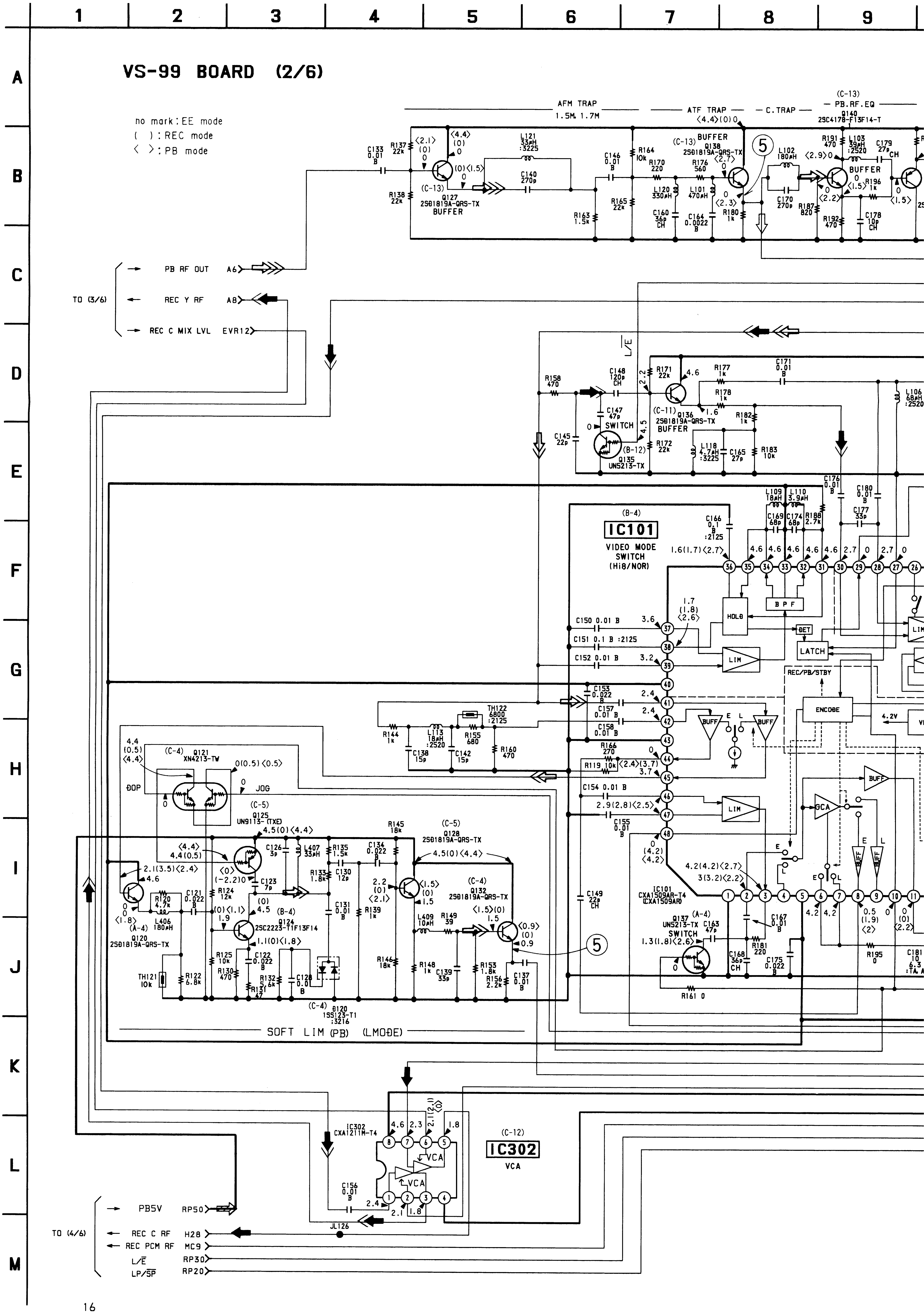

22
23
24
25
26
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
Q297 UN5113-TX JOG SWITCH
PAL JOG
ACK OC
Q302 UN5113-TX
Q305 2SC4178-F13F14-T
FL371 4.43MHz
BPF
Q303 2SB1819A-QRS-TX
Q307 UN5213-TX
Q296 UN5213-TX ON/OFF SWITCH
Q298 2SC4178-F13F14-T
Q241 MA110-TX
SELECT SWITCH
FL302 3.58/4.43M
CE BPF
L308 100μH
PAOCSEL
C EMPH1
BBECONT
C EMPH2
YC SEL
B EMPH OUT
BET ABJ
ACC OUT
CT 2
CT 1
GND 2
Y CORR P
Vcc 2
AFCFL
BCFB
APCFL
TEST
CHROMA CORRELATION DET
REC CONV
ACK SW
CHROMA BEEM
C MUTE
ACK SW
ACK DTB
ACK CONT
APC DET
VCO
1/8
90 SHIFT
VXO XO
Q308 UN5113-TX SWITCH
L307 27μH
X301 3.58MHz
Q299 2SC4178-F13F14-T
Q301 2SB1819A-QRS-TX
BUFFER
32
22

VS-99 BOARD



• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»	
PB	⇨	⇨»	⇨»	


1
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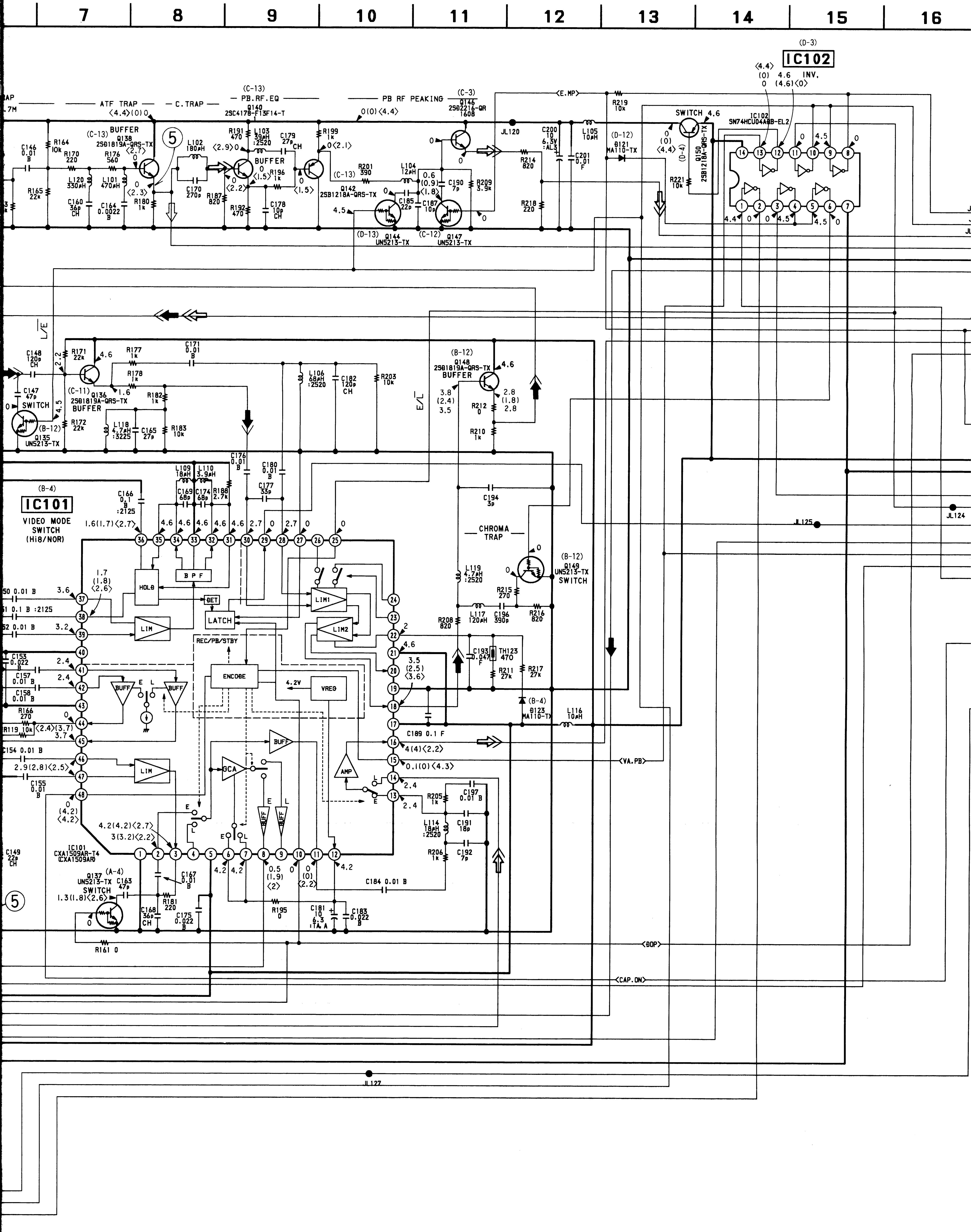
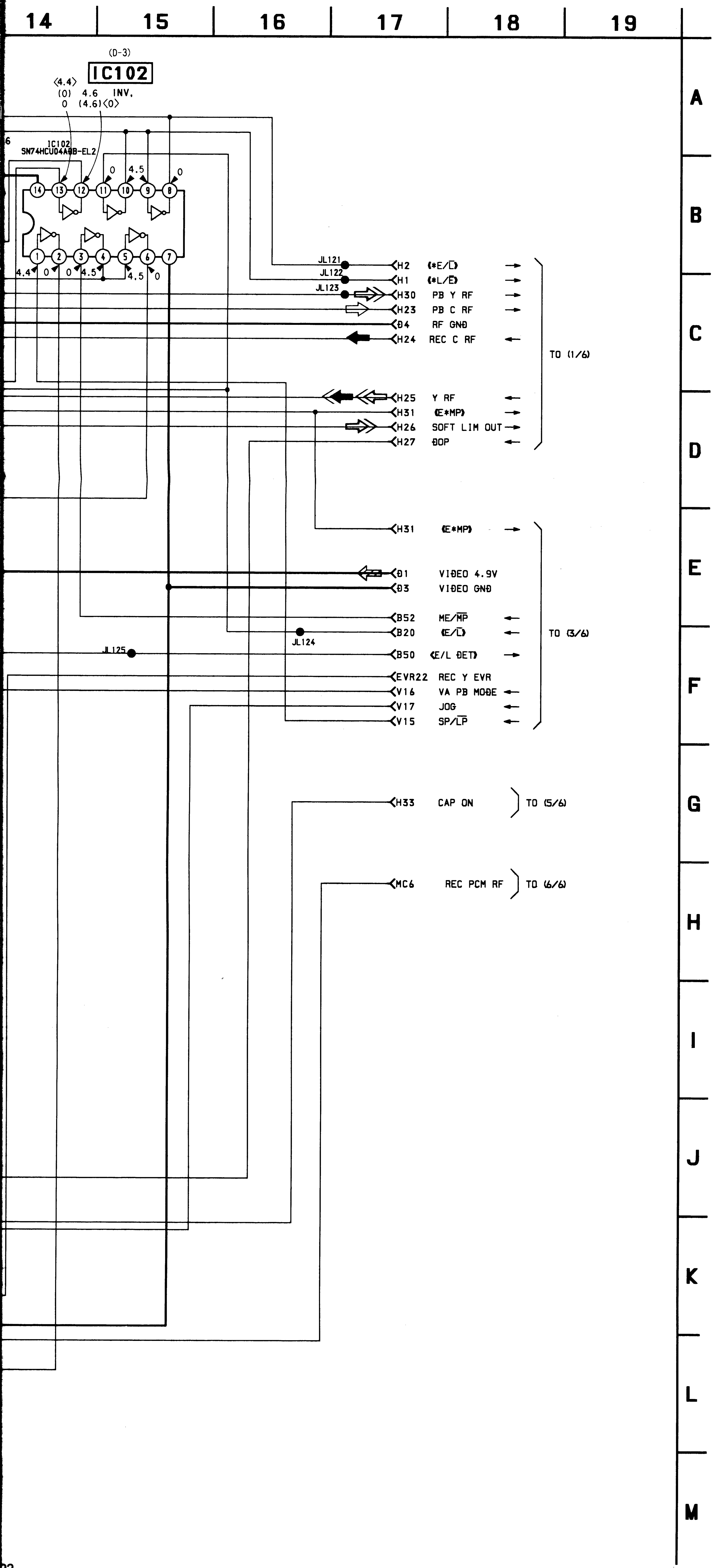
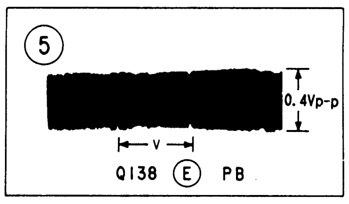
A
B
C
D
E
F
G
H
I
J
K
L
M
VS-99 BOARD (2/6)
no mark : EE mode
( ) : REC mode
〈 〉 : PB mode
AFM TRAP
1.5M, 1.7M
ATF TRAP
〈4.4〉(0) 0
C. TRAP
(C-13)
PB.RF.EQ
Q140
2SC4178-F13F14-T
BUFFER
Q138
2SD1819A-QRS-TX
Q127
2SD1819A-QRS-TX
BUFFER
L121 33μH :3225
C140 270p
C133 0.01 B
R137 22k
R138 22k
C146 0.01 B
R164 10k
R170 220
R176 560
L120 330μH
L101 470μH
C160 36p CH
C164 0.0022 B
R180 1k
R163 1.5k
R165 22k
L102 180μH
C170 270p
R187 820
R191 470
L103 39μH :2520
C179 27p CH
R196 1k
R192 470
C178 10p CH
⑤
TO (3/6)
PB RF OUT A6
REC Y RF A8
REC C MIX LVL EVR12
L/E
R158 470
C148 120p CH
C147 47p
SWITCH
C145 22p
(B-12) Q135 UN5213-TX
R171 22k
(C-11) Q136
2SD1819A-QRS-TX
BUFFER
R172 22k
R177 1k
R178 1k
R182 1k
C171 0.01 B
L118 4.7μH :3225
C165 27p
R183 10k
L106 68μH :2520
C176 0.01 B
C180 0.01 B
C177 33p
L109 18μH
L110 3.9μH
C169 68p
C174 68p
R188 2.7k
(B-4)
IC101
VIDEO MODE SWITCH (Hi8/NOR)
C166 0.1 B :2125
HOLD
BPF
DET
LATCH
LIM
REC/PB/STBY
ENCODE
4.2V
BUFF
E L
GCA
C150 0.01 B
C151 0.1 B :2125
C152 0.01 B
C153 0.022 B
C157 0.01 B
C158 0.01 B
R166 270
R119 10k
C154 0.01 B
C155 0.01 B
C149 22p CH
IC101
CXA1509AR-T4
(CXA1509AR)
Q137 (A-4)
UN5213-TX
SWITCH
C163 47p
C167 0.01 B
C168 36p CH
R181 220
C175 0.022 B
R161 0
R195 0
TH122 6800 :2125
R144 1k
L113 18μH :2520
R155 680
R160 470
C138 15p
C142 15p
(C-4) Q121
XN4213-TW
DOP
JOG
(C-5)
Q125
UN9113-(TXE)
Q128
2SD1819A-QRS-TX
R145 18k
C126 3p
L407 33μH
R135 1.5k
C134 0.022 B
R133 1.8k
C130 12p
C123 7p
(B-4)
Q124
2SC2223-T1F13F14
(C-4)
Q132
2SD1819A-QRS-TX
R124 12k
R120 4.7k
C121 0.022 B
L406 180μH
(A-4)
Q120
2SD1819A-QRS-TX
C131 0.01 B
R139 1k
L409 10μH
R149 39
C139 33p
R148 1k
R146 18k
R153 1.8k
R156 2.2k
C137 0.01 B
TH121 10k
R122 6.8k
R125 10k
R130 470
C122 0.022 B
R132 5.6k
R131 47
C128 0.01 B
(C-4) D120
1SS123-T1 :3216
SOFT LIM (PB) (LMODE)
IC302
CXA1211M-T4
VCA
(C-12)
IC302
VCA
C156 0.01 B
JL126
TO (4/6)
PB5V RP50
REC C RF H28
REC PCM RF MC9
L/E RP30
LP/SP RP20


7
8
9
10
11
12
13
14
15
16
ATF TRAP
C.TRAP
PB.RF.EQ
PB RF PEAKING
(C-13)
Q140
2SC4178-F13F14-T
(C-3)
Q146
2SB2216-QR
1608
(C-13) BUFFER
Q138
2SB1819A-QRS-TX
BUFFER
Q142
2SB1218A-QRS-TX
(D-13) Q144
UN5213-TX
(C-12) Q147
UN5213-TX
JL120
<E.MP>
R219
10k
(D-12)
D121
MA110-TX
SWITCH 4.6
(D-4)
Q150
2SB1218A-QRS-TX
(D-3)
IC102
SN74HCU04ABB-EL2
INV.
L/E
E/L
(B-12)
Q148
2SB1819A-QRS-TX
BUFFER
(C-11) Q136
2SB1819A-QRS-TX
BUFFER
SWITCH
(B-12)
Q135
UN5213-TX
(B-4)
IC101
VIDEO MODE
SWITCH
(Hi8/NOR)
HOLD
BPF
DET
LATCH
LIM
LIM1
LIM2
REC/PB/STBY
ENCODE
4.2V
VREG
BUFF
GCA
AMP
CHROMA
TRAP
(B-12)
Q149
UN5213-TX
SWITCH
(B-4)
D123
MA110-TX
L116
10μH
<VA.PB>
<DOP>
<CAP.ON>
JL125
JL124
JL127
IC101
CXA1509AR-T4
(CXA1509AR)
Q137 (A-4)
UN5213-TX
SWITCH
R161 0
C189 0.1 F
C184 0.01 B
R195 0
C181 10 6.3 :TA A
C183 0.022 B


14
15
16
17
18
19
A
B
C
D
E
F
G
H
I
J
K
L
M
(D-3)
IC102
<4.4>
(0) 4.6 INV.
0 (4.6)<0>
IC102
SN74HCU04ASB-EL2
0
4.5
0
4.4
0
0
4.5
4.5
0
JL121
JL122
JL123
H2 (*E/L)
H1 (*L/E)
H30 PB Y RF
H23 PB C RF
B4 RF GND
H24 REC C RF
TO (1/6)
H25 Y RF
H31 (E*MP)
H26 SOFT LIM OUT
H27 DOP
H31 (E*MP)
B1 VIDEO 4.9V
B3 VIDEO GND
B52 ME/MP
B20 (E/L)
JL124
JL125
B50 (E/L DET)
TO (3/6)
EVR22 REC Y EVR
V16 VA PB MODE
V17 JOG
V15 SP/LP
H33 CAP ON
TO (5/6)
MC6 REC PCM RF
TO (6/6)
6
23

VS-99 BOARD

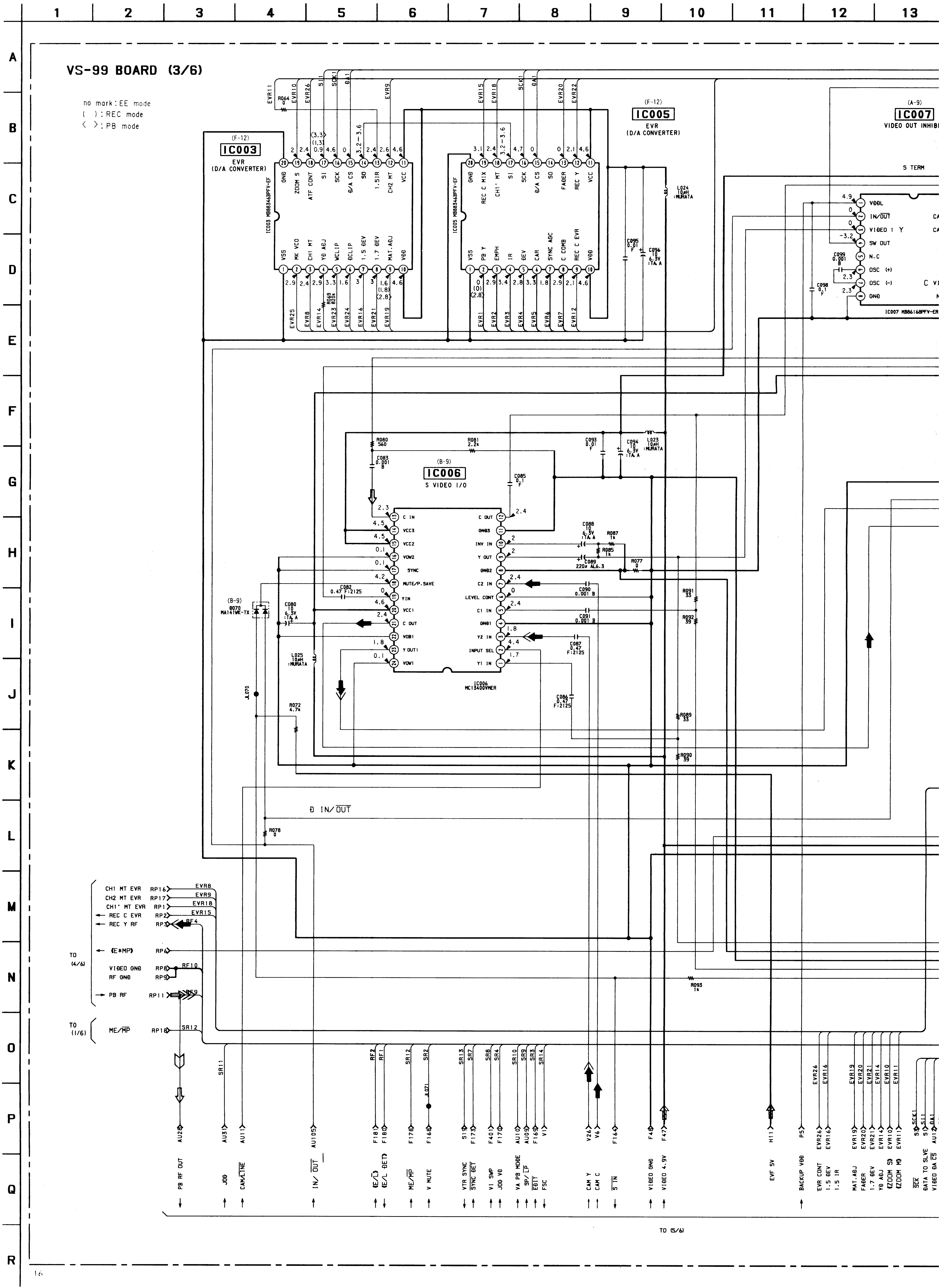


- **SIGNAL PATH**

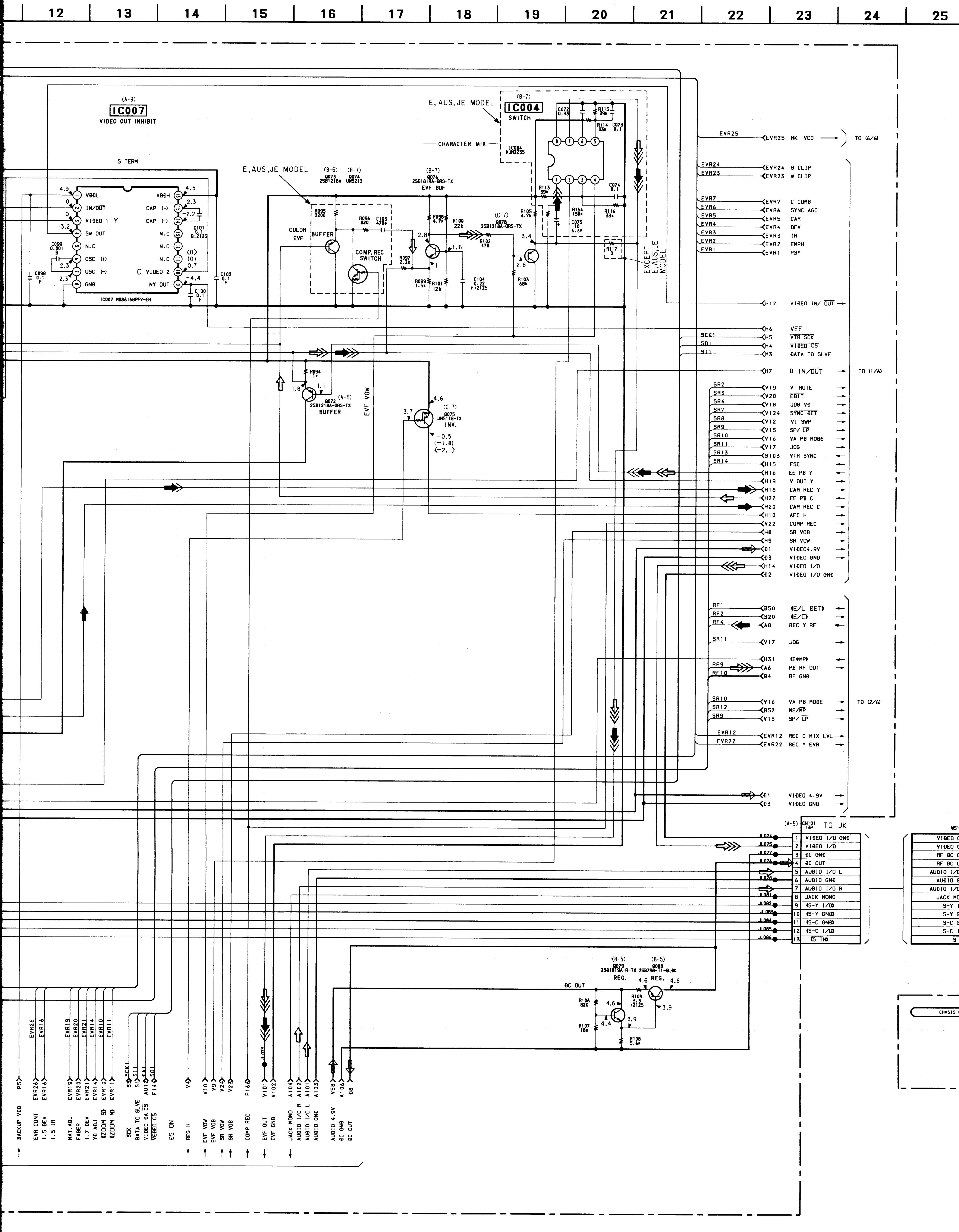
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡>		
PB	⇨	⇨>>	⇨>>>	

VS-99 (VIDEO), JK-108 (VIDEO/AUDIO JACK) SCHEMATIC DIAGRAM • See page 4-13 for Printed wiring board.

– Ref. No. VS-99 BOARD: 3,000 Series, JK-108 BOARD: 4,000 Series –


VS-99 BOARD (3/6)
no mark : EE mode
( ) : REC mode
〈 〉 : PB mode
IC003
EVR
(D/A CONVERTER)
IC003 MB88346PFV-EF
IC005
EVR
(D/A CONVERTER)
IC005 MB88346PFV-EF
IC007
VIDEO OUT INHIBIT
IC007 MB88616PFV-ER
IC006
S VIDEO I/O
IC006 MC13400VMER
D070 MA141WK-TX
Đ IN/OUT
TO (4/6)
TO (1/6)
TO (5/6)
CH1 MT EVR
CH2 MT EVR
CH1' MT EVR
REC C EVR
REC Y RF
(E*MP)
VIDEO GND
RF GND
PB RF
ME/MP
PB RF OUT
JOG
CAM/LINE
IN/OUT
(E/L)
(E/L DET)
ME/MP
V MUTE
VTR SYNC
SYNC DET
V1 SWP
JOG V0
VA PB MODE
SP/LP
EDIT
FSC
CAM Y
CAM C
S IN
VIDEO GND
VIDEO 4.9V
EVF 5V
BACKUP VDD
EVR CONT
1.5 DEV
1.5 IR
MAT.ADJ
FADER
1.7 DEV
YD ADJ
(ZOOM S)
(ZOOM M)
SCK
DATA TO SLVE
VIDEO DA CS

JACK


12
13
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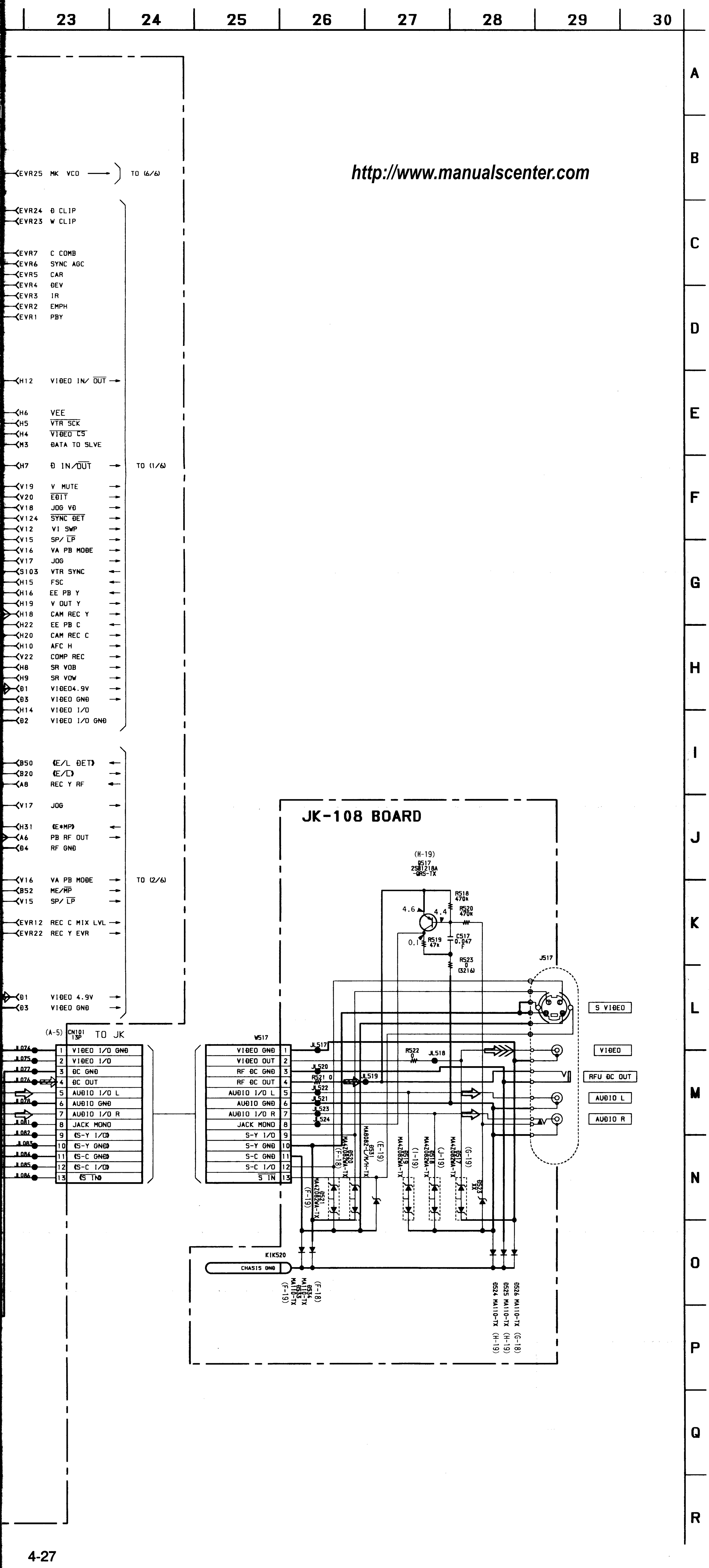
23
24
25
(A-9)
IC007
VIDEO OUT INHIBIT
S TERM
VDDL
IN/OUT
VIDEO 1 Y
SW OUT
N.C
OSC (+)
OSC (-)
GND
VDDH
CAP (-)
CAP (-)
N.C
N.C
N.C
C VIDEO 2
NY OUT
IC007 MB86168PFV-ER
C098 0.1
C099 0.001
C100 0.1
C101 0.1 B:2125
C102 0.1
E,AUS,JE MODEL
(B-6) Q073 2SB1218A
(B-7) Q074 UN5213
COLOR EVF
BUFFER
COMP.REC SWITCH
R095 2200
R096 820
C103 470p
R097 2.2k
(B-7) Q076 2SD1819A-QRS-TX EVF BUF
R098 4.7k
R099 1.5k
R100 22k
R101 12k
R102 470
C104 0.22 F:2125
(C-7) Q078 2SB1218A-QRS-TX
R103 68k
R105 4.7k
E,AUS,JE MODEL
(B-7)
IC004
SWITCH
CHARACTER MIX
IC004 NJM2235
C072 0.33
R115 39k
R114 33k
C073 0.1
C074 0.1
R113 39k
R154 150k
C075 10 6.3V
R116 33k
R117 0
EXCEPT E,AUS,JE MODEL
R094 1k
Q072 2SB1218A-QRS-TX BUFFER
(A-6)
EVF VDW
(C-7) Q075 UN5118-TX INV.
-0.5 (-1.8) (-2.1)
EVR25 MK VCO TO (6/6)
EVR24 D CLIP
EVR23 W CLIP
EVR7 C COMB
EVR6 SYNC AGC
EVR5 CAR
EVR4 DEV
EVR3 IR
EVR2 EMPH
EVR1 PBY
H12 VIDEO IN/OUT
H6 VEE
SCK1 H5 VTR SCK
SO1 H4 VIDEO CS
SI1 M3 DATA TO SLVE
H7 D IN/OUT TO (1/6)
SR2 V19 V MUTE
SR3 V20 EDIT
SR4 V18 JOG VD
SR7 V124 SYNC DET
SR8 V12 VI SWP
SR9 V15 SP/LP
SR10 V16 VA PB MODE
SR11 V17 JOG
SR13 S103 VTR SYNC
SR14 H15 FSC
H16 EE PB Y
H19 V OUT Y
H18 CAM REC Y
H22 EE PB C
H20 CAM REC C
H10 AFC H
V22 COMP REC
H8 SR VDD
H9 SR VDW
D1 VIDEO4.9V
D3 VIDEO GND
H14 VIDEO I/O
D2 VIDEO I/O GND
RF1 B50 (E/L DET)
RF2 B20 (E/L)
RF4 A8 REC Y RF
SR11 V17 JOG
H31 (E*MP)
RF9 A6 PB RF OUT
RF10 B4 RF GND
SR10 V16 VA PB MODE TO (2/6)
SR12 B52 ME/MP
SR9 V15 SP/LP
EVR12 EVR12 REC C MIX LVL
EVR22 EVR22 REC Y EVR
D1 VIDEO 4.9V
D3 VIDEO GND
(A-5) CN101 13P TO JK
1 VIDEO I/O GND
2 VIDEO I/O
3 DC GND
4 DC OUT
5 AUDIO I/O L
6 AUDIO GND
7 AUDIO I/O R
8 JACK MONO
9 (S-Y I/O)
10 (S-Y GND)
11 (S-C GND)
12 (S-C I/O)
13 (S IN)
(B-5) Q079 2SD1819A-R-TX REG.
(B-5) Q080 2SB798-T1-DLDK REG.
DC OUT
R106 820
R107 18k
R108 5.6k
R109 3.3 :2125
P5 BACKUP VDD
EVR26 EVR CONT 1.5 DEV
EVR16 1.5 IR
EVR19 MAT.ADJ
EVR20 FADER
EVR21 1.7 DEV
EVR14 YD ADJ
EVR10 (ZOOM S)
EVR11 (ZOOM M)
S3 SCK
S1 DATA TO SLVE
AU1 VIDEO DA CS
F14 VIDEO CS
DS ON
V4 REG H
V10 EVF VDW
V9 EVF VDD
V24 SR VDW
V23 SR VDD
F16 COMP REC
V101 EVF OUT
V102 EVF GND
A104 JACK MONO
A102 AUDIO I/O R
A101 AUDIO I/O L
A103 AUDIO GND
V58 AUDIO 4.9V
A106 DC GND
D8 DC OUT
VIDEO
VIDEO
RF DC
RF DC
AUDIO I/
AUDIO
AUDIO I/
JACK MO
S-Y
S-Y
S-C
S-C
CHASSIS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I
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L
M
N
O
P
Q
R
EVR25 MK VCO
TO (6/6)
EVR24 D CLIP
EVR23 W CLIP
EVR7 C COMB
EVR6 SYNC AGC
EVR5 CAR
EVR4 DEV
EVR3 IR
EVR2 EMPH
EVR1 PBY
H12 VIDEO IN/ OUT
H6 VEE
H5 VTR SCK
H4 VIDEO CS
M3 DATA TO SLVE
H7 D IN/OUT
TO (1/6)
V19 V MUTE
V20 EDIT
V18 JOG VD
V124 SYNC DET
V12 VI SWP
V15 SP/ LP
V16 VA PB MODE
V17 JOG
S103 VTR SYNC
H15 FSC
H16 EE PB Y
H19 V OUT Y
H18 CAM REC Y
H22 EE PB C
H20 CAM REC C
H10 AFC H
V22 COMP REC
H8 SR VOB
H9 SR VOW
D1 VIDEO4.9V
D3 VIDEO GND
H14 VIDEO I/O
D2 VIDEO I/O GND
B50 (E/L DET)
B20 (E/D)
A8 REC Y RF
V17 JOG
H31 (E*MP)
A6 PB RF OUT
D4 RF GND
V16 VA PB MODE
B52 ME/MP
V15 SP/ LP
TO (2/6)
EVR12 REC C MIX LVL
EVR22 REC Y EVR
D1 VIDEO 4.9V
D3 VIDEO GND
(A-5) CN101 13P TO JK
JL074
JL075
JL077
JL076
JL078
JL081
JL082
JL083
JL084
JL085
JL086
1 VIDEO I/O GND
2 VIDEO I/O
3 DC GND
4 DC OUT
5 AUDIO I/O L
6 AUDIO GND
7 AUDIO I/O R
8 JACK MONO
9 (S-Y I/O)
10 (S-Y GND)
11 (S-C GND)
12 (S-C I/O)
13 (S IN)
JK-108 BOARD
W517
VIDEO GND 1
VIDEO OUT 2
RF DC GND 3
RF DC OUT 4
AUDIO I/O L 5
AUDIO GND 6
AUDIO I/O R 7
JACK MONO 8
S-Y I/O 9
S-Y GND 10
S-C GND 11
S-C I/O 12
S IN 13
(H-19)
Q517
2SB1218A
-QRS-TX
R518 470k
R520 470k
4.6
4.4
0.1
R519 47k
C517 0.047 F
R523 0 (3216)
J517
S VIDEO
VIDEO
RFU DC OUT
AUDIO L
AUDIO R
JL517
JL520
R521 0
JL519
JL522
JL521
JL523
JL524
R522 0
JL518
D520 MA4Z082WA-TX (F-18)
D531 MA8082-L/M/H-TX (E-19)
D519 MA4Z082WA-TX (I-19)
D518 MA4Z082WA-TX (J-19)
D517 MA4Z082WA-TX (G-19)
D523 XX
D521 MA4Z082WA-TX (F-19)
KIK520
CHASIS GND
D534 MA110-TX (F-18)
D533 MA110-TX (F-19)
D526 MA110-TX (G-18)
D525 MA110-TX (H-19)
D524 MA110-TX (H-19)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	
PB	⇨	⇨»	⇨»»	⇨

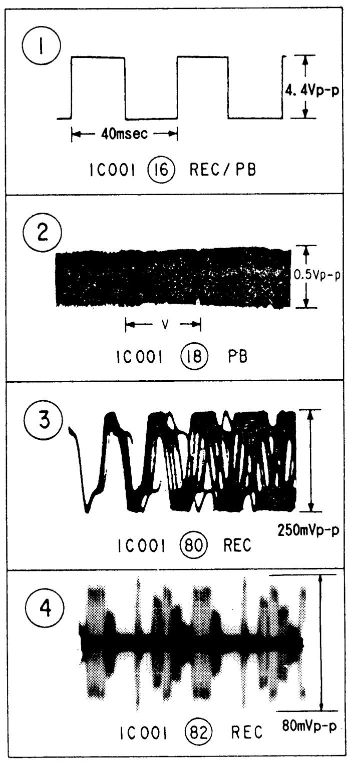
	REC	REC/PB	PB
Ref. signal			▷

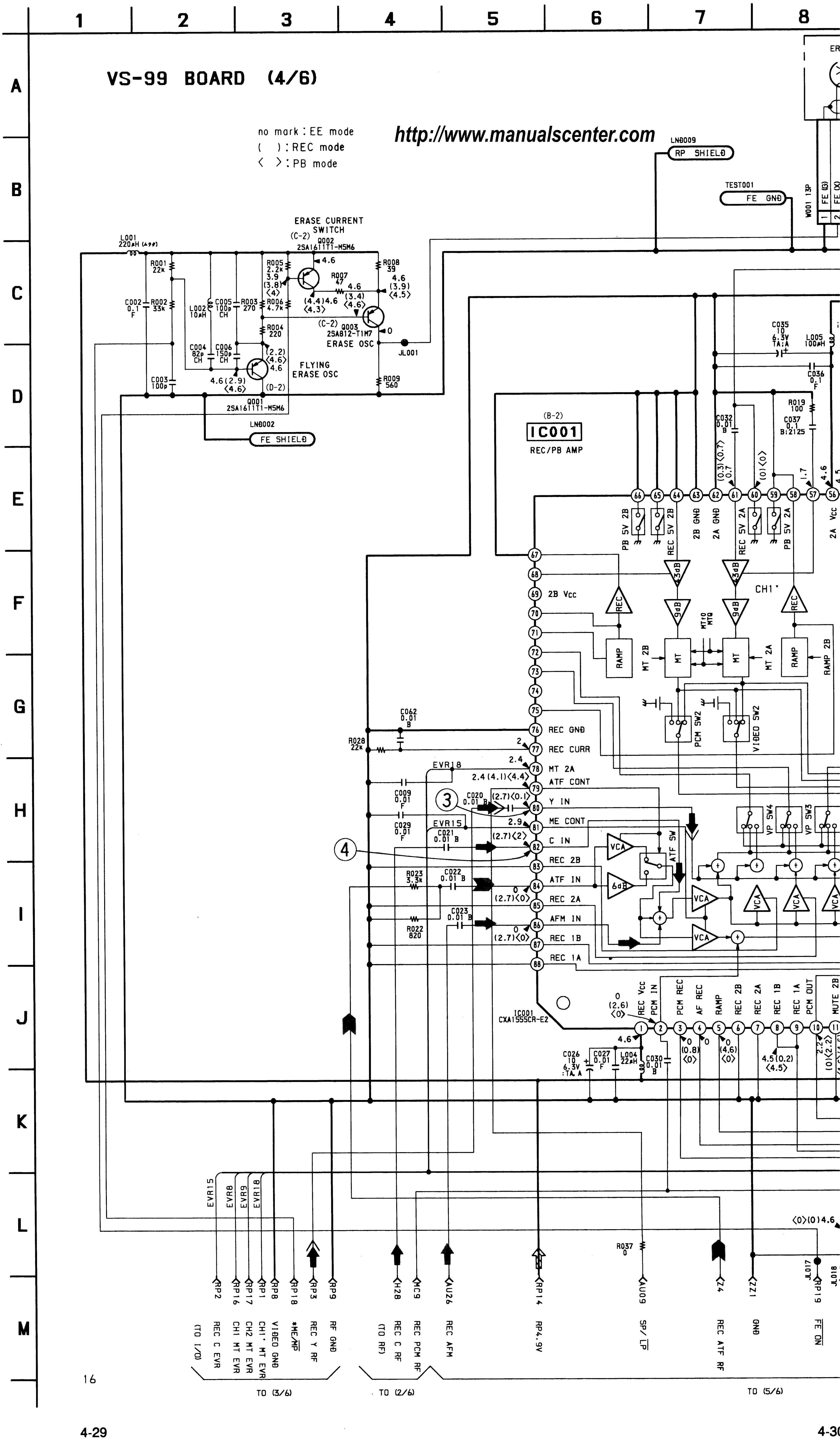
VS-99 (REC/PB HEAD AMPLIFIER) SCHEMATIC DIAGRAM

- See page 4-13 for Printed wiring board.

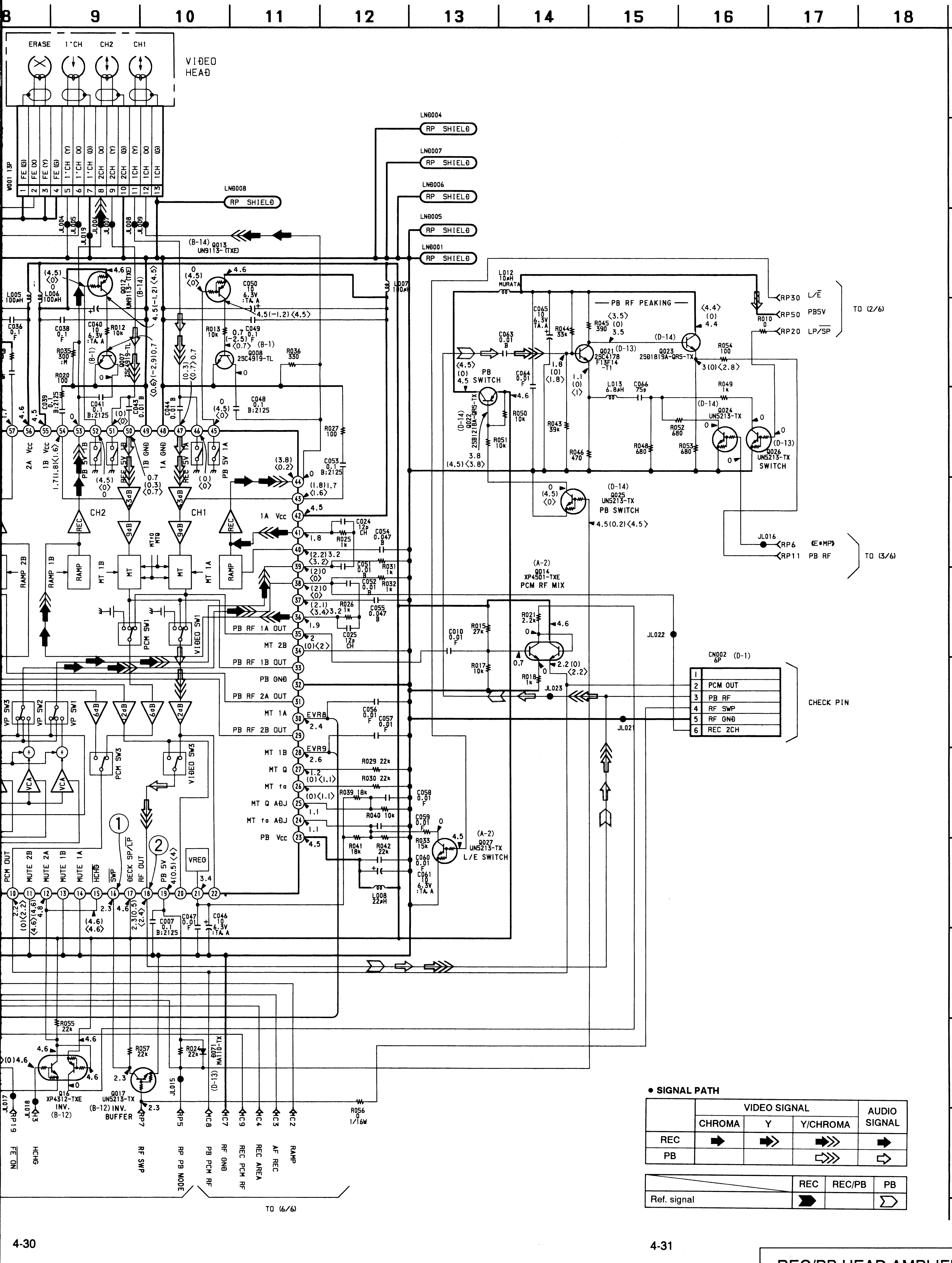
– Ref. No. VS-99 BOARD: 3,000 Series –

VS-99 BOARD




1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
VS-99 BOARD (4/6)
no mark : EE mode
( ) : REC mode
〈 〉 : PB mode
http://www.manualscenter.com
LN0009
RP SHIELD
TEST001
FE GND
ERASE CURRENT SWITCH
(C-2) Q002 2SA1611T1-M5M6
Q003 2SA812-T1M7
ERASE OSC
FLYING ERASE OSC
Q001 2SA1611T1-M5M6
L001 220μH
JL001
LN0002
FE SHIELD
(B-2)
IC001
REC/PB AMP
IC001 CXA1555CR-E2
PB 5V 2B
REC 5V 2B
2B GND
2A GND
REC 5V 2A
PB 5V 2A
2A Vcc
2B Vcc
CH1'
RAMP
MT 2B
MT
MT 2A
RAMP 2B
PCM SW2
VIDEO SW2
REC GND
REC CURR
MT 2A
ATF CONT
Y IN
ME CONT
C IN
REC 2B
ATF IN
REC 2A
AFM IN
REC 1B
REC 1A
VCA
ATF SW
6dB
9dB
36dB
REC
VP SW4
VP SW3
REC Vcc
PCM IN
PCM REC
AF REC
RAMP
REC 2B
REC 2A
REC 1B
REC 1A
PCM OUT
MUTE 2B
EVR15
EVR8
EVR9
EVR18
RP2
RP16
RP17
RP1
RP8
RP18
RP3
RP9
H28
MC9
AU26
RP14
AU09
Z4
Z21
RP19
JL017
JL018
R037 0
REC C EVR (TO I/O)
CH1 MT EVR
CH2 MT EVR
CH1' MT EVR
VIDEO GND
*ME/MP
REC Y RF
RF GND
REC C RF (TO RF)
REC PCM RF
REC AFM
RP4.9V
SP/LP
REC ATF RF
GND
FE ON
TO (3/6)
TO (2/6)
TO (5/6)
W001 13P

16



VIDEO HEAD
ERASE
1'CH
CH2
CH1
W001 13P
FE (G)
FE (X)
FE (Y)
1'CH (Y)
1'CH (X)
1'CH (G)
2CH (X)
2CH (Y)
2CH (G)
1CH (Y)
1CH (X)
1CH (G)
LN0008 RP SHIELD
LN0004 RP SHIELD
LN0007 RP SHIELD
LN0006 RP SHIELD
LN0005 RP SHIELD
LN0001 RP SHIELD
Q013 UN9113-(TXE)
Q012 UN9113-(TXE)
Q007 2SC4919-TL
Q008 2SC4919-TL
L005 100μH
L006 100μH
L007 100μH
L012 10μH MURATA
PB RF PEAKING
Q021 2SC4178 F13F14 -T1
Q023 2SD1819A-QRS-TX
Q022 2SB1218A-QRS-TX
PB SWITCH
Q024 UN5213-TX
Q026 UN5213-TX SWITCH
Q025 UN5213-TX PB SWITCH
RP30 L/E
RP50 PB5V
RP20 LP/SP
TO (2/6)
JL016
RP6 (E*MP)
RP11 PB RF
TO (3/6)
Q014 XP4501-TXE PCM RF MIX
JL022
JL023
JL021
CN002 6P (D-1)
1
2 PCM OUT
3 PB RF
4 RF SWP
5 RF GND
6 REC 2CH
CHECK PIN
CH2
CH1
REC
RAMP
MT 1B
MT
MT 1A
RAMP 1B
RAMP 2B
PCM SW1
VIDEO SW1
PCM SW3
VIDEO SW3
VP SW3
VP SW2
VP SW1
VCA
VREG
2A Vcc
1B Vcc
PB 5V 1B
REC 5V 1B
1B GND
1A GND
REC 5V 1A
PB 5V 1A
1A Vcc
PB RF 1A OUT
MT 2B
PB RF 1B OUT
PB GND
PB RF 2A OUT
MT 1A
PB RF 2B OUT
EVR8
EVR9
MT 1B
MT Q
MT fo
MT Q ADJ
MT fo ADJ
PB Vcc
PCM OUT
MUTE 2B
MUTE 2A
MUTE 1B
MUTE 1A
HCHG
SWP
DECK SP/LP
RF OUT
PB 5V
Q027 UN5213-TX L/E SWITCH
Q16 XP4312-TXE INV. (B-12)
Q017 UN5213-TX (B-12) INV. BUFFER
D071 MA110-TX
RP19 FE ON
HCHG
RF SWP
RP PB MODE
PB PCM RF
RF GND
REC PCM RF
REC AREA
AF REC
RAMP
TO (6/6)
R056 0 1/16W

• SIGNAL PATH

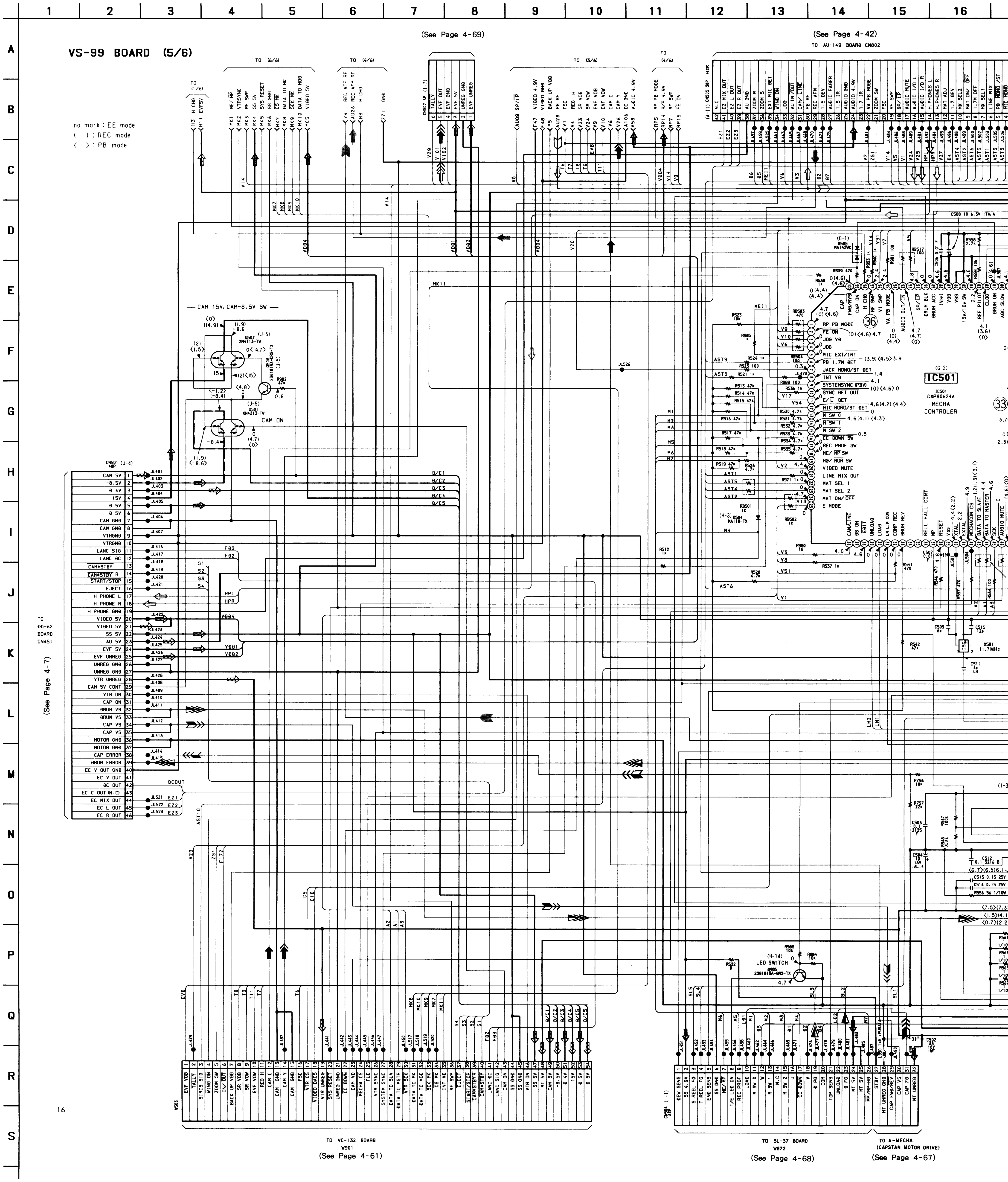
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡》	➡》》	➡
PB			⇨》》	⇨

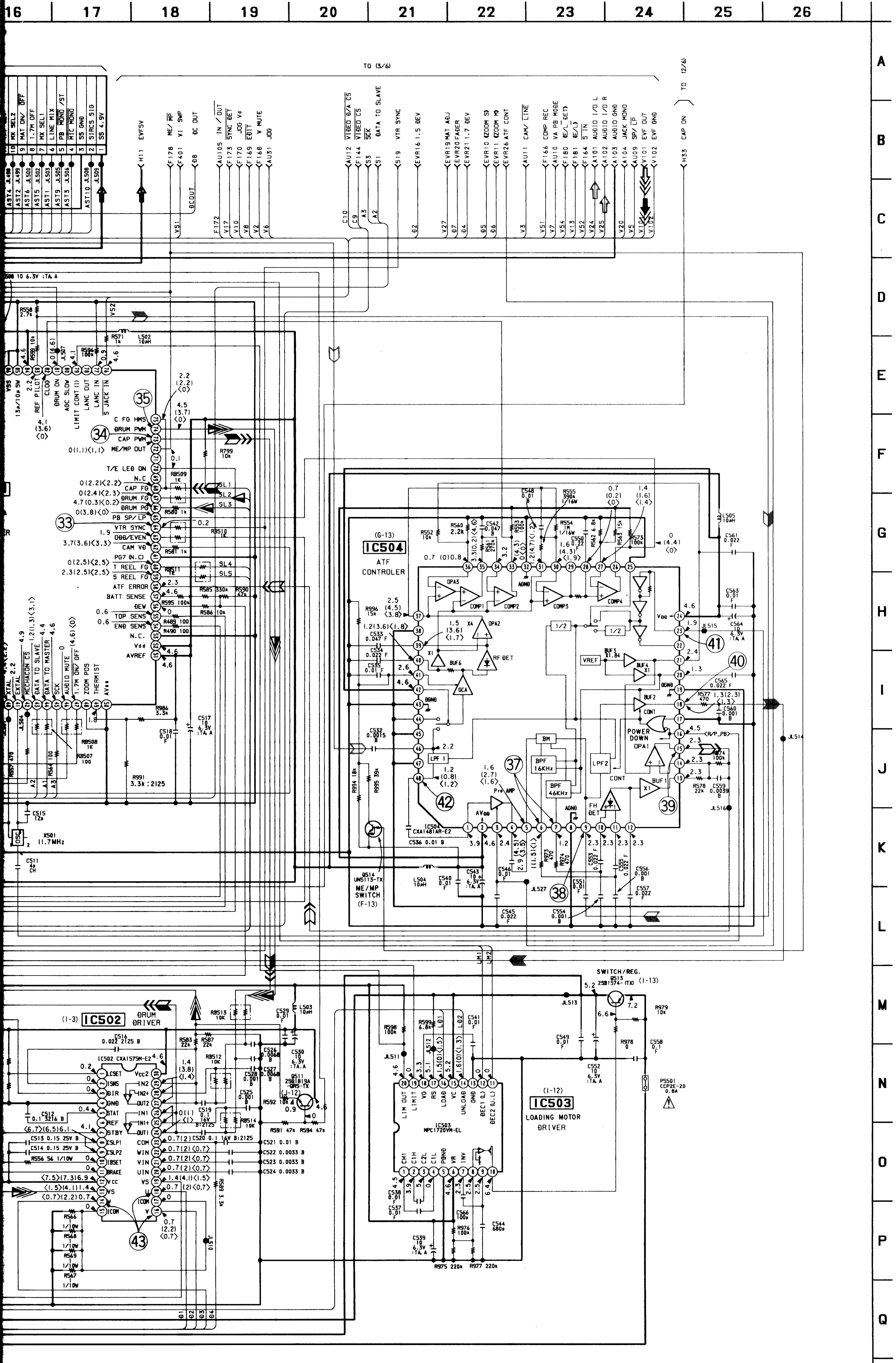
	REC	REC/PB	PB
Ref. signal	➤		▷

VS-99 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

• See page 4-13 for Printed wiring board.

– Ref. No. VS-99 BOARD: 3,000 Series –


VS-99 BOARD (5/6)
no mark : EE mode
( ) : REC mode
< > : PB mode
(See Page 4-69)
(See Page 4-42)
TO AU-149 BOARD CN802
TO (1/6)
TO (4/6)
TO (6/6)
TO (3/6)
– CAM 15V, CAM-8.5V SW –
Q502 XN4113-TW
Q503 2SB1815K-QR5-TX
Q501 XN4213-TW
CAM ON
CN501 (J-4) 46P
CAM 5V
-8.5V
D 4V
15V
D 5V
D 5V
CAM GND
CAM GND
VTRGND
VTRGND
LANC SIG
LANC DC
CAM⇔STBY
CAM⇔STBY R
START/STOP
EJECT
H PHONE L
H PHONE R
H PHONE GND
VIDEO 5V
VIDEO 5V
SS 5V
AU 5V
EVF 5V
EVF UNREG
UNREG GND
UNREG GND
VTR UNREG
CAM 5V CONT
VTR ON
CAP ON
DRUM VS
DRUM VS
CAP VS
CAP VS
MOTOR GND
MOTOR GND
CAP ERROR
DRUM ERROR
EC V OUT GND
EC V OUT
DC OUT
EC C OUT (N.C)
EC MIX OUT
EC L OUT
EC R OUT
TO DD-62 BOARD CN451
(See Page 4-7)
IC501 CXP80624A MECHA CONTROLER
X501 11.7MHz
(H-14) LED SWITCH
Q505 2SB1815A-QR5-TX
(H-3) Q504 MA110-TX
TO VC-132 BOARD W901
(See Page 4-61)
TO SL-37 BOARD W872
(See Page 4-68)
TO A-MECHA (CAPSTAN MOTOR DRIVE)
(See Page 4-67)
16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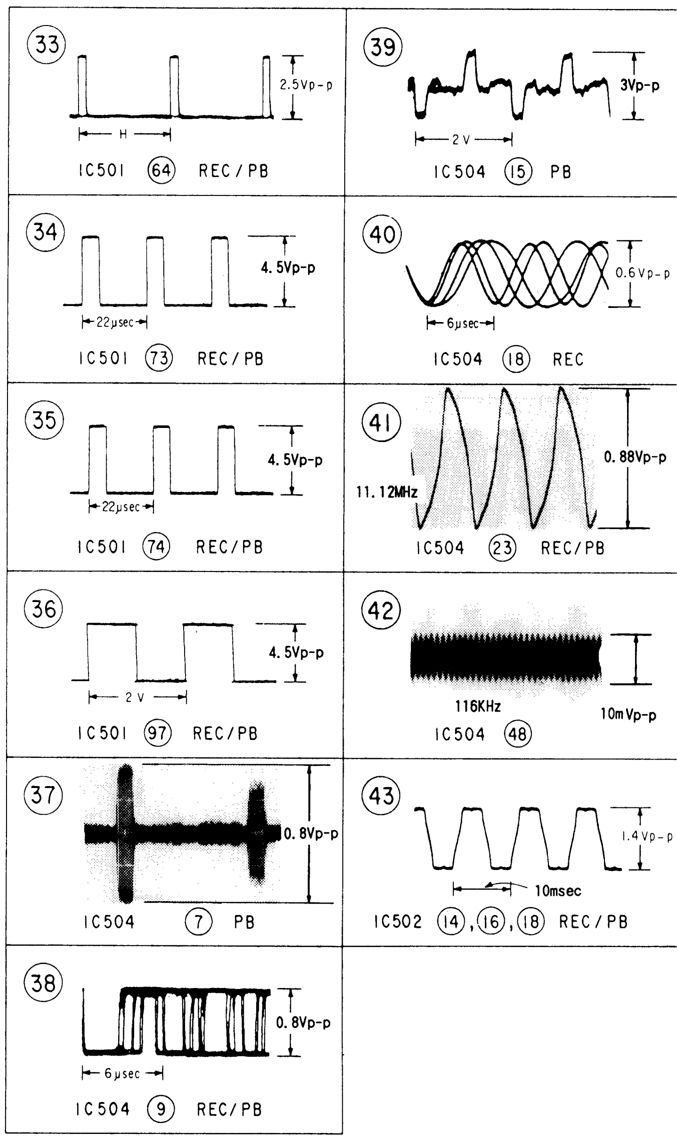
J
K
L
M
N
O
P
Q
R
S
TO (3/6)
TO (2/6)
(G-13)
IC504
ATF CONTROLER
IC504 CXA1481AR-E2
(I-3) IC502 DRUM DRIVER
IC502 CXA1575M-E2
SWITCH/REG.
(I-12)
IC503
LOADING MOTOR DRIVER
IC503 MPC1720VM-EL
Q514 UN5115-TX ME/MP SWITCH (F-13)
X501 11.7MHz
POWER DOWN OPA1
(33)
(34)
(35)
(37)
(38)
(39)
(40)
(41)
(42)
(43)

VS-99 BOARD



• SIGNAL PATH

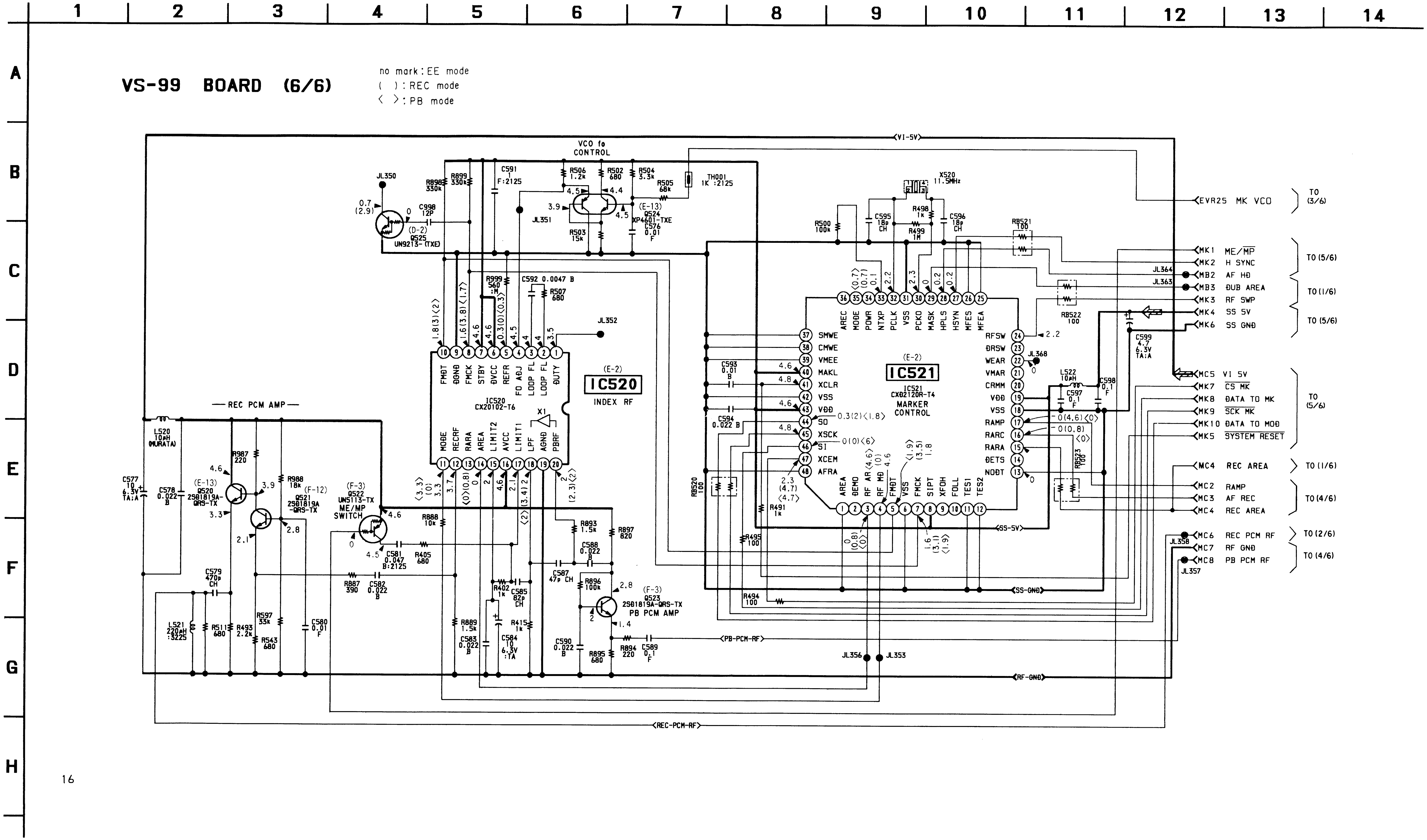
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB			⇨»»	⇨

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷»	
Drum servo (speed and phase)		▷»»	
Capstan speed servo			
Capstan phase servo			▷»
Capstan servo (speed and phase)		▶»»	
Ref. signal	▶	▶	▷

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

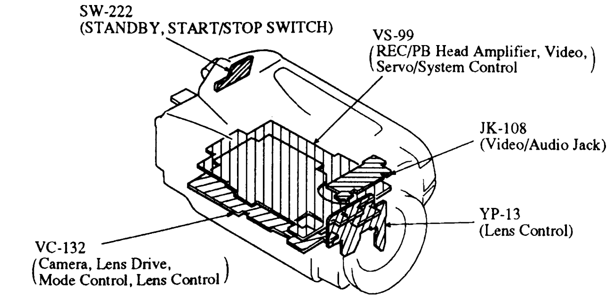
VS-99 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-13 for Printed wiring board.

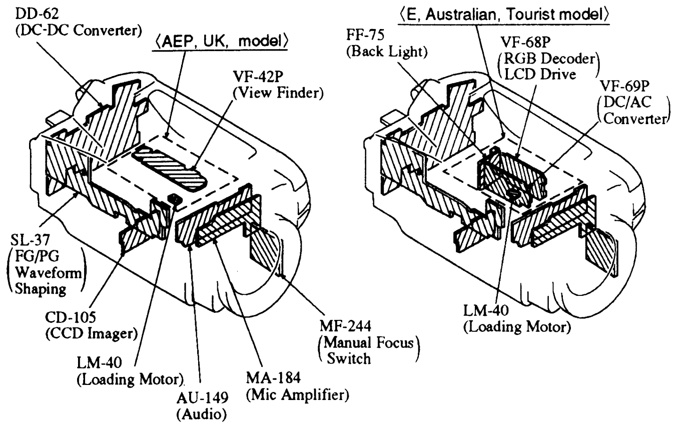
– Ref. No. VS-99 BOARD: 3,000 Series –


VS-99 BOARD (6/6)
no mark : EE mode
( ) : REC mode
〈 〉: PB mode
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H
VCO fo CONTROL
IC520 CX20102-T6 INDEX RF
IC521 CX02120R-T4 MARKER CONTROL
(E-2)
REC PCM AMP
Q520 2SB1819A-QRS-TX
Q521 2SB1819A-QRS-TX
Q522 UN5113-TX ME/MP SWITCH
Q523 2SB1819A-QRS-TX PB PCM AMP
Q524 XP4601-TXE
Q525 UN9213-(TXE)
X520 11.5MHz
X1
TH001 1K :2125
L520 10µH (MURATA)
L521 220µH :3225
L522 10µH
JL350 JL351 JL352 JL353 JL356 JL357 JL358 JL363 JL364 JL368
FMDT DGND FMCK STBY DVCC REFR FO ADJ LOOP FL LOOP FL DUTY
MODE RECRF RARA AREA LIMIT2 AVCC LIMIT1 LPF AGND PBRF
AREC MODE POWR NTXP PCLK VSS PCKO MASK HPLS HSYN MFES MFEA
SMWE CMWE VMEE MAKL XCLR VSS VDD SO XSCK SI XCEM AFRA
RFSW DRSW WEAR VMAR CRMM VDD VSS RAMP RARC RARA DETS NDDT
AREA DEMO RF AR RF MD FMDT VSS FMCK SIPT XFDH FOLL TES1 TES2
〈VI-5V〉
〈SS-5V〉
〈SS-GND〉
〈RF-GND〉
〈PB-PCM-RF〉
〈REC-PCM-RF〉
EVR25 MK VCO — TO (3/6)
MK1 ME/MP
MK2 H SYNC
MB2 AF HD
MB3 DUB AREA
MK3 RF SWP
MK4 SS 5V
MK6 SS GND
TO (5/6)
TO (1/6)
TO (5/6)
MC5 VI 5V
MK7 CS MK
MK8 DATA TO MK
MK9 SCK MK
MK10 DATA TO MOD
MK5 SYSTEM RESET
TO (5/6)
MC4 REC AREA — TO (1/6)
MC2 RAMP
MC3 AF REC
MC4 REC AREA
TO (4/6)
MC6 REC PCM RF — TO (2/6)
MC7 RF GND
MC8 PB PCM RF
TO (4/6)
C577 10 6.3V TA:A
C578 0.022 B
C579 470p CH
C580 0.01 F
C581 0.047 B:2125
C582 0.022 B
C583 0.022 B
C584 10 6.3V :TA
C585 82p CH
C587 47p CH
C588 0.022 B
C589 0.1 F
C590 0.022 B
C591 1 F:2125
C592 0.0047 B
C593 0.01 B
C594 0.022 B
C595 18p CH
C596 18p CH
C597 0.1 F
C598 0.1 F
C599 4.7 6.3V TA:A
C998 12P
C576 0.01 F
R402 1k
R405 680
R415 1k
R491 1k
R493 2.2k
R494 100
R495 100
R498 1k
R499 1M
R500 100k
R502 680
R503 15k
R504 3.3k
R505 68k
R506 1.2k
R507 680
R511 680
R543 680
R597 33k
R887 390
R888 10k
R889 1.5k
R893 1.5k
R894 220
R895 680
R896 100k
R897 820
R898 330k
R899 330k
R987 220
R988 18k
R999 560
RB520 100
RB521 100
RB522 100
RB523 100
16

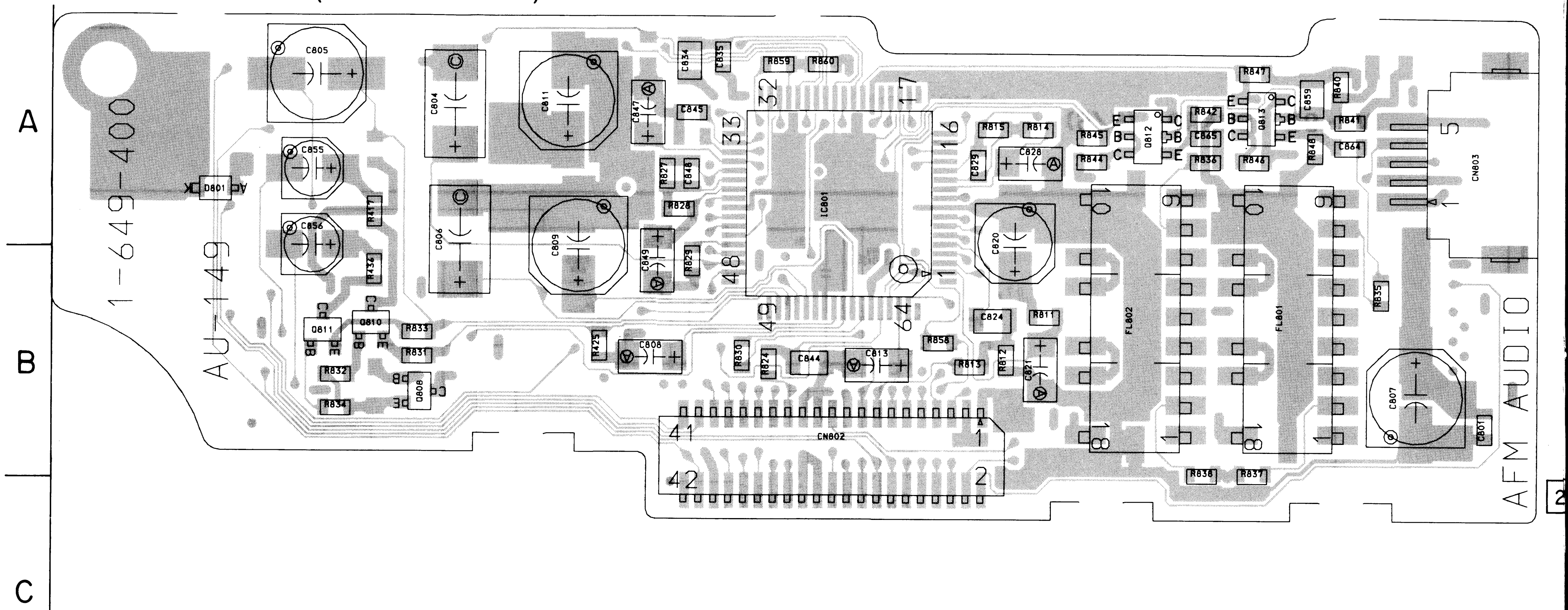
AU-149 (AUDIO) PRINTED WIRING BOARD

– Ref. No. AU-149 BOARD: 5,000 Series –

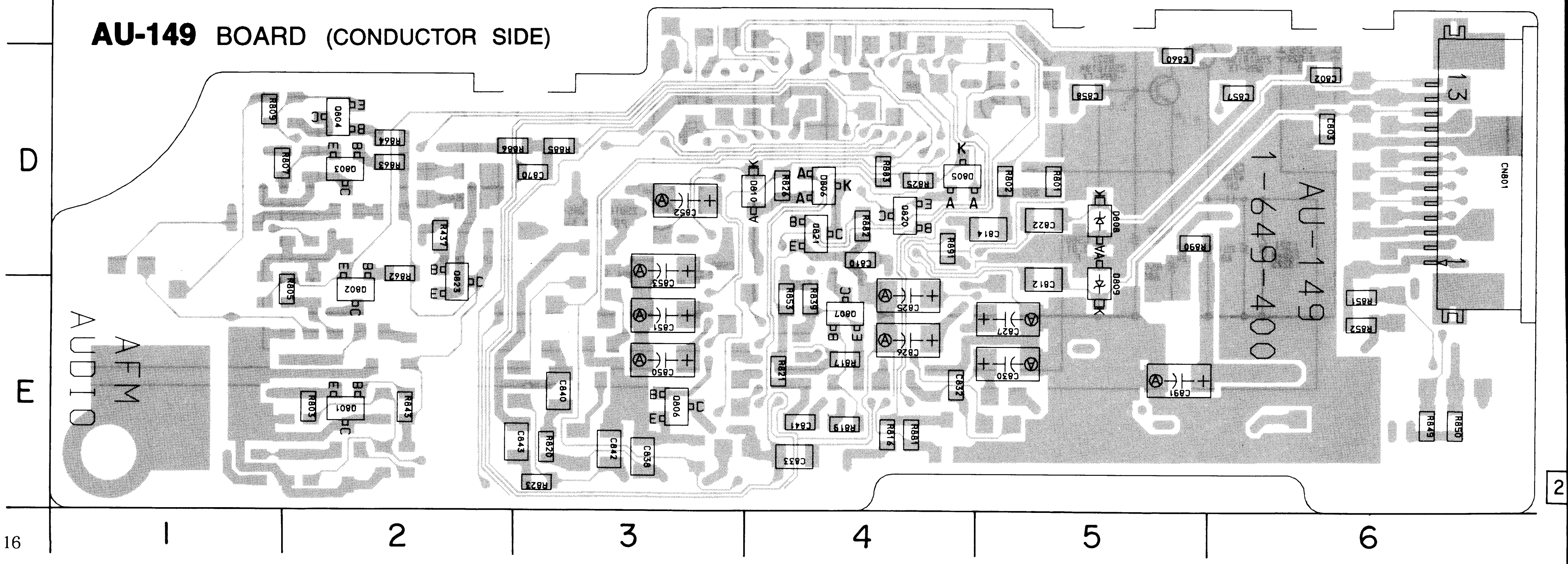

SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)


DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder LCD Drive)
VF-69P
(DC/AC Converter)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)
LM-40
(Loading Motor)

AU-149 BOARD (COMPONENT SIDE)

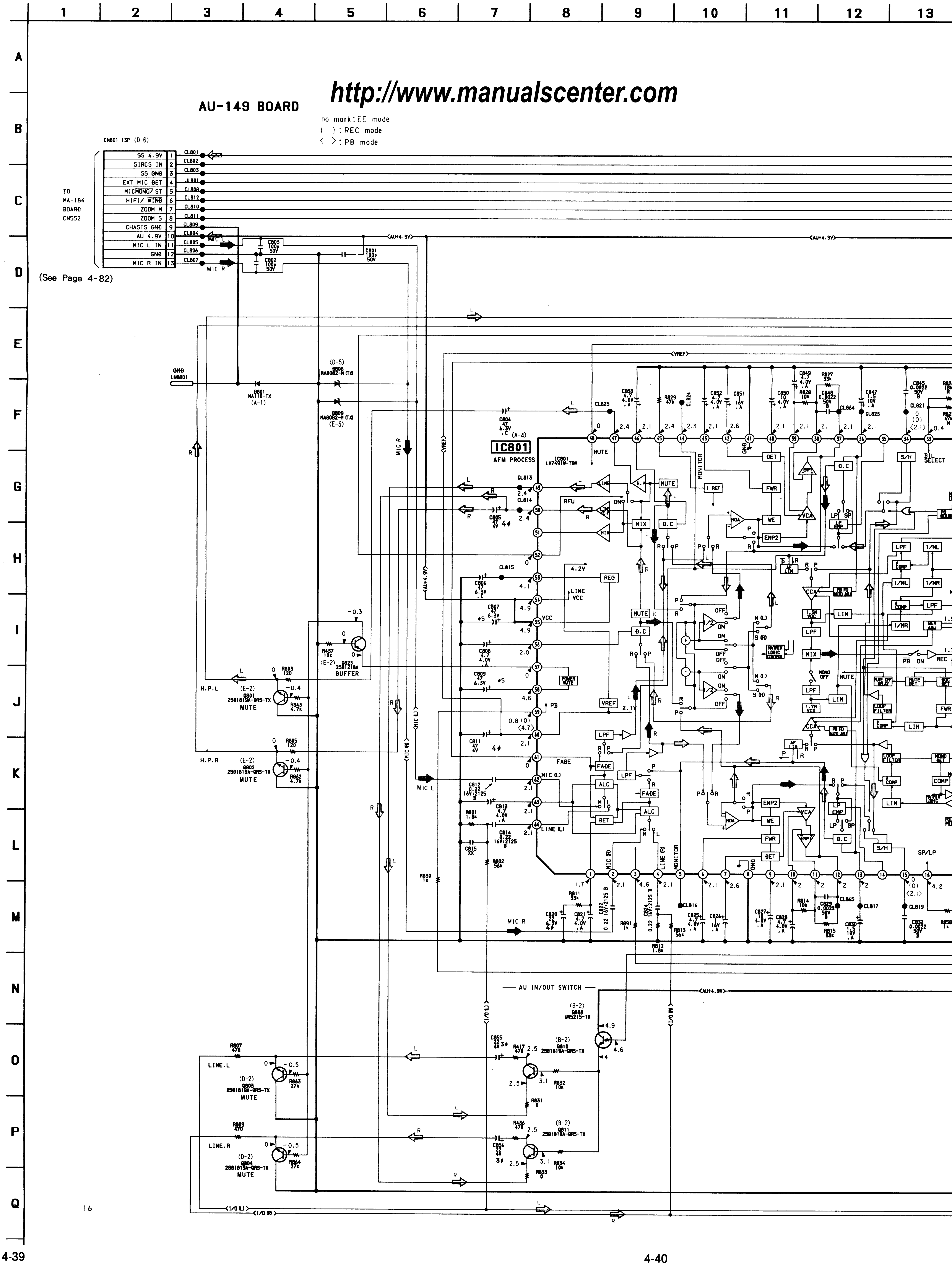

A
B
C
1-649-400
AU-149
AFM AUDIO
C805
C855
C856
D801
C804
C806
C811
C809
C847
C849
C834
C835
C845
R859
R860
R827
C848
R828
R829
IC801
32
33
17
16
48
49
64
1
R417
R434
Q811
Q810
R833
R831
R832
R834
Q808
R425
C808
R830
R824
C844
C813
R856
R813
R812
C821
C824
R811
C820
R815
R814
C829
C828
R845
R844
Q812
R842
R836
Q813
R847
R846
C859
R840
R841
C864
CN803
5
FL802
FL801
R835
C807
C801
CN802
41
42
2
R838
R837

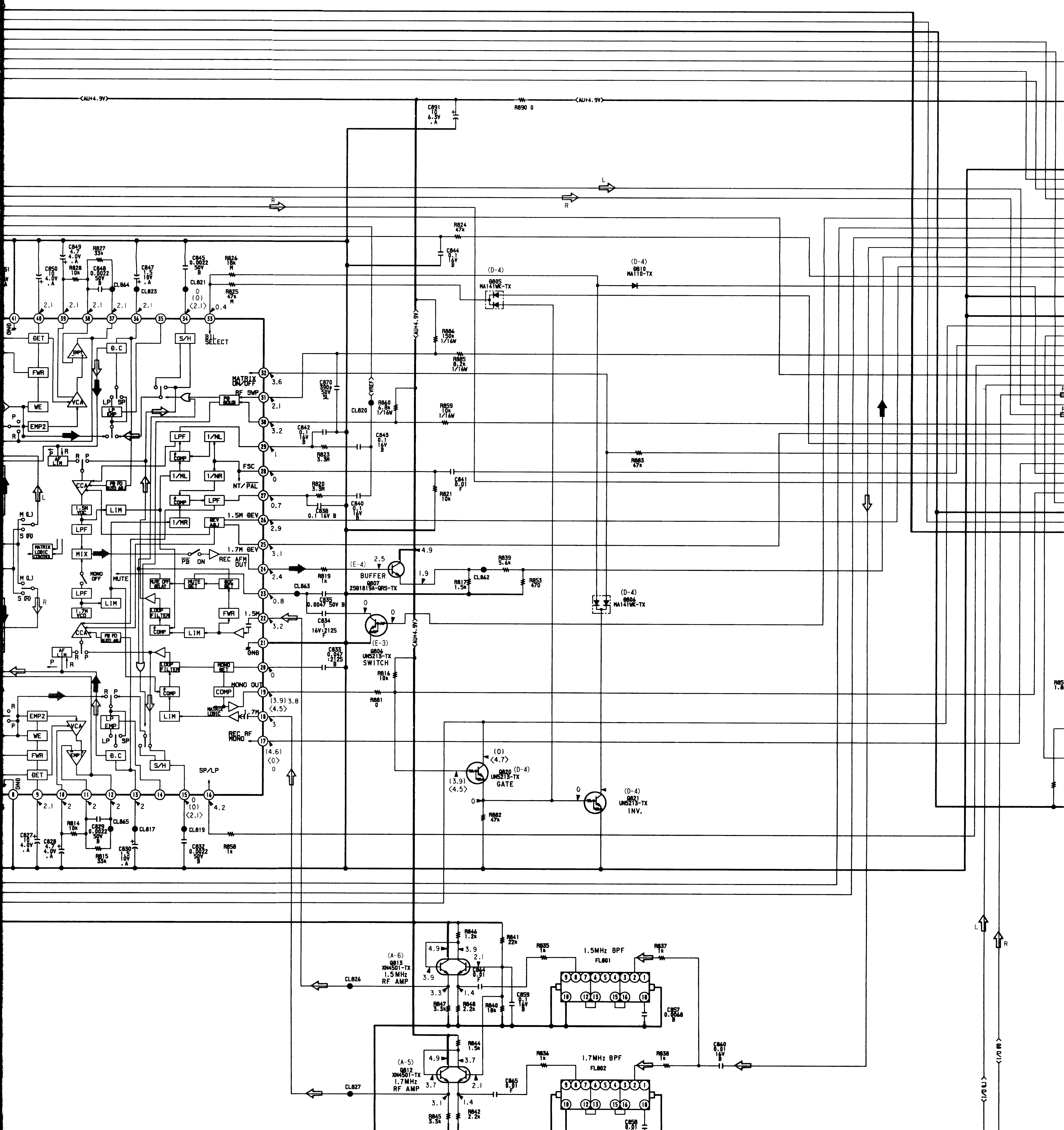
AU-149 BOARD (CONDUCTOR SIDE)


D
E
1
2
3
4
5
6
AU-149
1-649-400
AFM AUDIO
R809
Q804
R864
R807
Q803
R863
R866
R865
C870
R437
R805
Q802
R862
Q823
R803
Q801
R843
C852
C853
C851
C850
C840
C843
R820
R823
C842
C858
Q806
D810
R822
D806
R883
R825
D805
R802
R801
Q820
Q821
R882
C814
C822
R891
C819
R855
R839
Q807
C825
C826
C827
C830
R817
R821
C841
R819
R816
R881
C833
C832
C812
D808
D809
C891
R890
C803
C802
C857
C860
C858
CN801
13
R851
R852
R849
R850

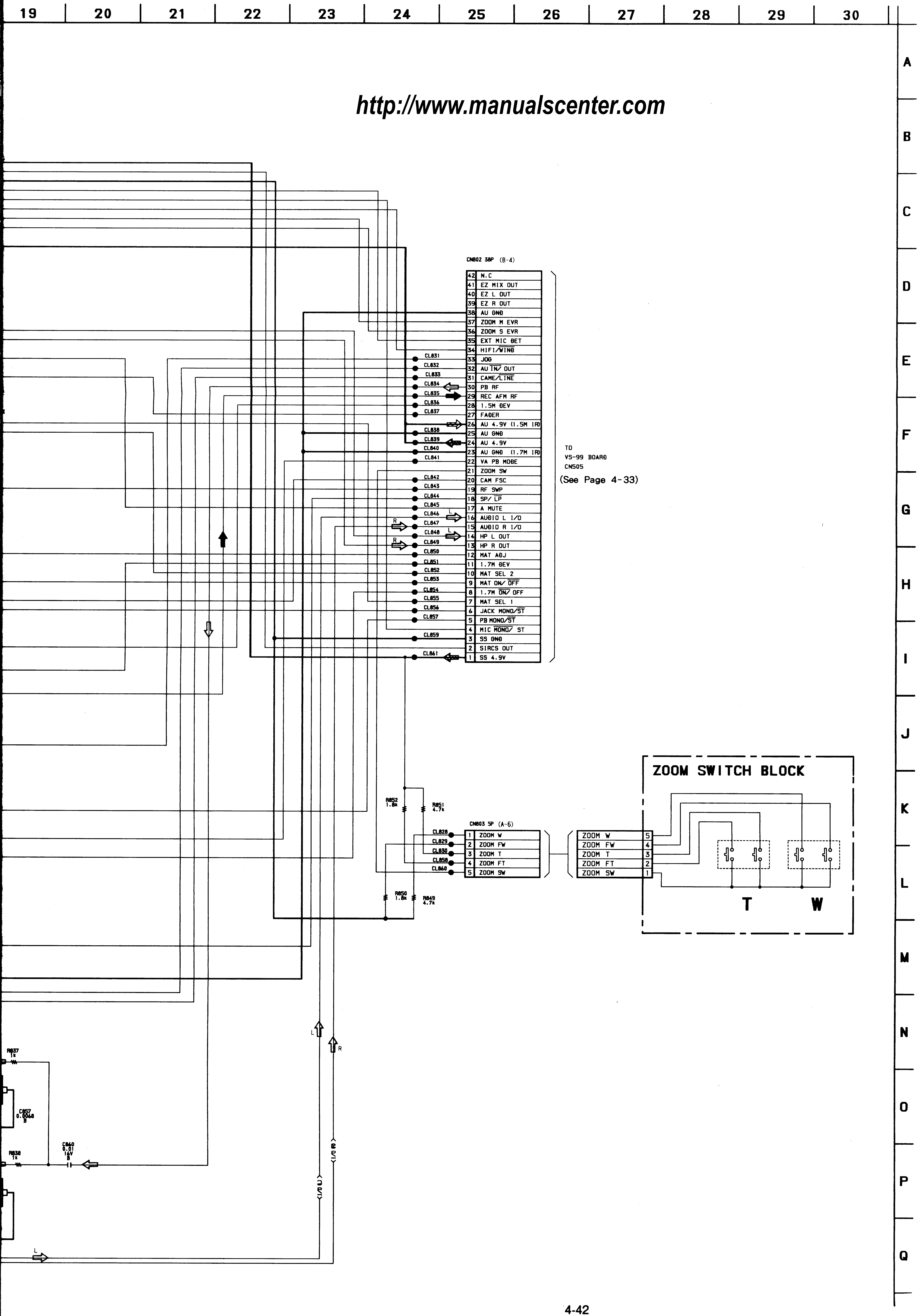
AU-149 (AUDIO) SCHEMATIC DIAGRAM

– Ref. No. AU-149 BOARD: 5,000 Series –


AU-149 BOARD
no mark : EE mode
( ) : REC mode
〈 〉 : PB mode
CN801 13P (D-6)
SS 4.9V 1
SIRCS IN 2
SS GND 3
EXT MIC DET 4
MIC MONO/ST 5
HIFI/ WIND 6
ZOOM M 7
ZOOM S 8
CHASIS GND 9
AU 4.9V 10
MIC L IN 11
GND 12
MIC R IN 13
TO MA-184 BOARD CN552
(See Page 4-82)
MIC R
GND LN8801
D801 MA110-TX (A-1)
D808 MA8082-M (TX) (D-5)
D809 MA8082-M (TX) (E-5)
IC801
AFM PROCESS
IC801 LA7491W-TBM
MUTE
MONITOR
DET
FWR
WE
EMP2
MDA
VCA
D.C
LPF
REG
4.2V
LINE VCC
VCC
POWER MUTE
PB
FADE
ALC
MIC L
LINE L
MIC R
LINE R
VREF
S/H
SELECT
LIM
MIX
CCA
1/NL
1/NR
COMP
LOOP FILTER
REC
SP/LP
MATRIX LOGIC CONTROL
Q823 2SB1218A BUFFER
H.P.L
Q801 2SB1819A-QRS-TX MUTE
H.P.R
Q802 2SB1819A-QRS-TX MUTE
— AU IN/OUT SWITCH —
Q808 UN5215-TX (B-2)
Q810 2SB1819A-QRS-TX (B-2)
Q811 2SB1819A-QRS-TX (B-2)
LINE.L
Q803 2SB1819A-QRS-TX MUTE (D-2)
LINE.R
Q804 2SB1819A-QRS-TX MUTE (D-2)
〈AU+4.9V〉
〈VREF〉
〈I/O L〉
〈I/O R〉
1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H I J K L M N O P Q
16



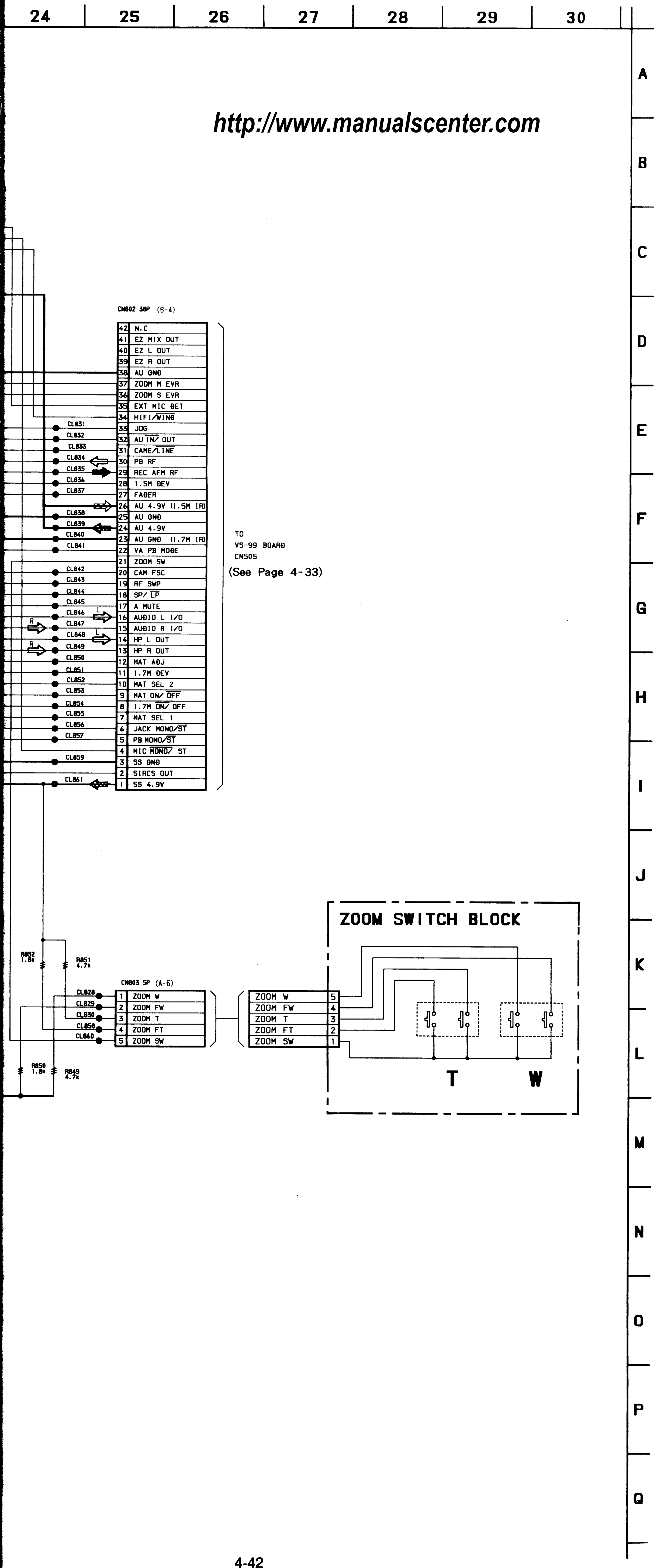
<AU+4.9V>
C891 10 6.3V .A
R890 0
<AU+4.9V>
L
R
R
R824 47k
C844 0.1 16V B
(D-4) Q805 MA141WK-TX
(D-4) Q810 MA110-TX
C849 4.7 4.0V .A
R827 33k
C850 10 4.0V .A
R828 10k
C848 0.0022 50V B
CL864
C847 1.5 10V .A
CL823
C845 0.0022 50V B
R826 18k M
CL821
R825 47k M
0 (0) <2.1>
0.4
2.1
DET
FWR
BPF
VCA
WE
EMP2
LP SP
LP EMP
B.C
S/H
B/L SELECT
MATRIX ON/OFF
RF SWP
PB DOUB
3.6
2.1
3.2
1
0
0.7
2.9
3.1
2.4
0.8
3.2
0
LPF
1/NL
COMP
FSC
1/ML
1/NR
NT/PAL
LPF
1/MR
DEV ADJ
1.5M DEV
1.7M DEV
AF LIM
CCA
PB FO AUTO ADJ
1.5M VCO
LIM
MATRIX LOGIC CONTROL
MIX
MONO OFF
MUTE
1.7M VCO
PB ON
REC AFM OUT
MUTE OFF DELAY
MUTE DET
DOC SW DET
LOOP FILTER
FWR
1.5M
LIM
GND
MONO DET
MONO OUT
MATRIX LOGIC
1.7M
REC RF MONO
(3.9) 3.8 <4.5>
3
(4.6) <0> 0
SP/LP
M (L)
S (R)
R
P
C870 390p 50V SL
<VREF>
CL820
R860 6.8k 1/16W
R886 150k 1/16W
R885 8.2k 1/16W
R859 10k 1/16W
<AU+4.9V>
C842 0.1 16V B
C843 0.1 16V B
R823 3.3M
R883 47k
C841 0.01 F
R821 10k
R820 3.3M
C838 0.1 16V B
C840 0.1 16V B
(E-4) BUFFER Q807 2SB1819A-QRS-TX
2.5
4.9
1.9
R819 1k
CL863
C835 0.0047 50V B
C834 16V 2125 F
R817 1.5k
CL862
R839 5.6k
R853 470
(D-4) Q806 MA141WK-TX
(E-3) Q806 UN5213-TX SWITCH
C833 0.047 2125 B
R816 10k
R881 0
(0) <4.7>
(3.9) <4.5>
Q820 (D-4) UN5213-TX GATE
0
R882 47k
0
(D-4) Q821 UN5213-TX INV.
2.1
2
2
2
0 (0) <2.1>
4.2
C827 10 4.0V .A
C828 4.7 4.0V .A
R814 10k
C829 0.0022 50V B
CL865
CL817
CL819
R815 33k
C830 1.5 10V .A
C832 0.0022 50V B
R858 1k
R846 1.2k
R841 22k
R835 1k
1.5MHz BPF FL801
R837 1k
4.9
3.9
2.1
(A-6) Q813 XN4501-TX 1.5MHz RF AMP
3.9
C846 0.01 F
CL826
3.3
1.4
C859 0.1 16V B
R847 3.3k
R848 2.2k
R840 18k
C857 0.0068 B
R844 1.5k
R834 1k
1.7MHz BPF FL802
R838 1k
C860 0.01 16V B
4.9
3.7
(A-5) Q812 XN4501-TX 1.7MHz RF AMP
3.7
2.1
C845 0.01 F
CL827
3.1
1.4
R845 3.3k
R842 2.2k
C858 0.01 16V B
L
R
<I/O L>
<I/O R>
L
R


19
20
21
22
23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
CN802 38P (B-4)
42 N.C
41 EZ MIX OUT
40 EZ L OUT
39 EZ R OUT
38 AU GND
37 ZOOM M EVR
36 ZOOM S EVR
35 EXT MIC DET
34 HIFI/WIND
33 JOG
32 AU IN/ OUT
31 CAME/LINE
30 PB RF
29 REC AFM RF
28 1.5M DEV
27 FADER
26 AU 4.9V (1.5M IR)
25 AU GND
24 AU 4.9V
23 AU GND (1.7M IR)
22 VA PB MODE
21 ZOOM SW
20 CAM FSC
19 RF SWP
18 SP/ LP
17 A MUTE
16 AUDIO L I/O
15 AUDIO R I/O
14 HP L OUT
13 HP R OUT
12 MAT ADJ
11 1.7M DEV
10 MAT SEL 2
9 MAT ON/ OFF
8 1.7M ON/ OFF
7 MAT SEL 1
6 JACK MONO/ST
5 PB MONO/ST
4 MIC MONO/ ST
3 SS GND
2 SIRCS OUT
1 SS 4.9V
CL831
CL832
CL833
CL834
CL835
CL836
CL837
CL838
CL839
CL840
CL841
CL842
CL843
CL844
CL845
CL846
CL847
CL848
CL849
CL850
CL851
CL852
CL853
CL854
CL855
CL856
CL857
CL859
CL861
L
R
L
R
TO
VS-99 BOARD
CN505
(See Page 4-33)
R852
1.8k
R851
4.7k
CN803 5P (A-6)
CL828
CL829
CL830
CL858
CL860
1 ZOOM W
2 ZOOM FW
3 ZOOM T
4 ZOOM FT
5 ZOOM SW
R850
1.8k
R849
4.7k
ZOOM SWITCH BLOCK
ZOOM W 5
ZOOM FW 4
ZOOM T 3
ZOOM FT 2
ZOOM SW 1
T
W
R837
1k
C857
0.0068
B
R838
1k
C860
0.01
16V
B
L
R
<L I/O>
<R I/O>
L

• SI

R

F


24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
CN802 38P (B-4)
42 N.C
41 EZ MIX OUT
40 EZ L OUT
39 EZ R OUT
38 AU GND
37 ZOOM M EVR
36 ZOOM S EVR
35 EXT MIC DET
34 HIFI/WIND
33 JOG
32 AU IN/ OUT
31 CAME/LINE
30 PB RF
29 REC AFM RF
28 1.5M DEV
27 FADER
26 AU 4.9V (1.5M IR)
25 AU GND
24 AU 4.9V
23 AU GND (1.7M IR)
22 VA PB MODE
21 ZOOM SW
20 CAM FSC
19 RF SWP
18 SP/ LP
17 A MUTE
16 AUDIO L I/O
15 AUDIO R I/O
14 HP L OUT
13 HP R OUT
12 MAT ADJ
11 1.7M DEV
10 MAT SEL 2
9 MAT ON/ OFF
8 1.7M ON/ OFF
7 MAT SEL 1
6 JACK MONO/ST
5 PB MONO/ST
4 MIC MONO/ ST
3 SS GND
2 SIRCS OUT
1 SS 4.9V
CL831
CL832
CL833
CL834
CL835
CL836
CL837
CL838
CL839
CL840
CL841
CL842
CL843
CL844
CL845
CL846
CL847
CL848
CL849
CL850
CL851
CL852
CL853
CL854
CL855
CL856
CL857
CL859
CL861
L
R
L
R
TO
VS-99 BOARD
CN505
(See Page 4-33)
R852
1.8k
R851
4.7k
CN803 5P (A-6)
CL828
CL829
CL830
CL858
CL860
1 ZOOM W
2 ZOOM FW
3 ZOOM T
4 ZOOM FT
5 ZOOM SW
R850
1.8k
R849
4.7k
ZOOM SWITCH BLOCK
ZOOM W 5
ZOOM FW 4
ZOOM T 3
ZOOM FT 2
ZOOM SW 1
T
W

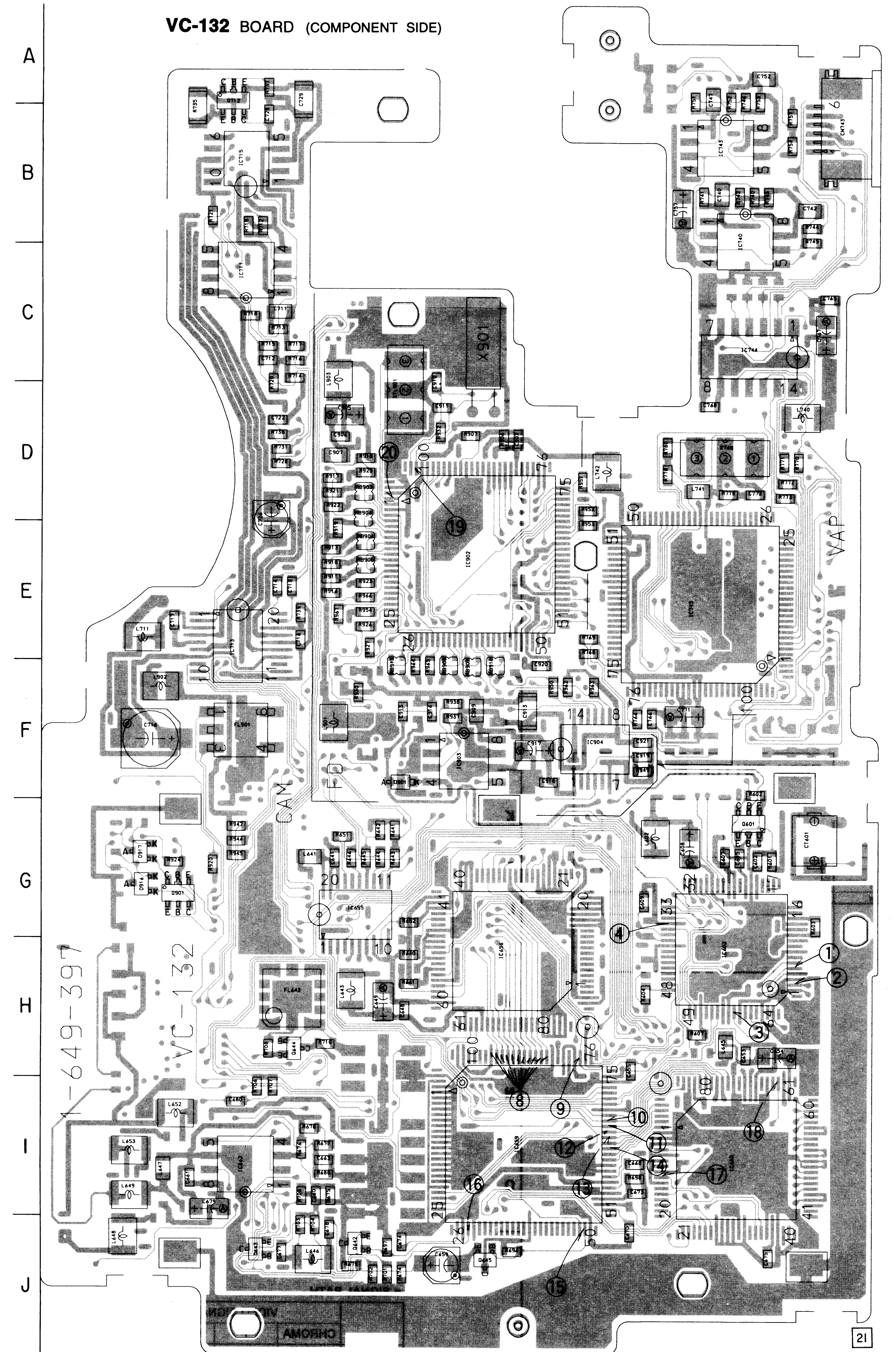
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

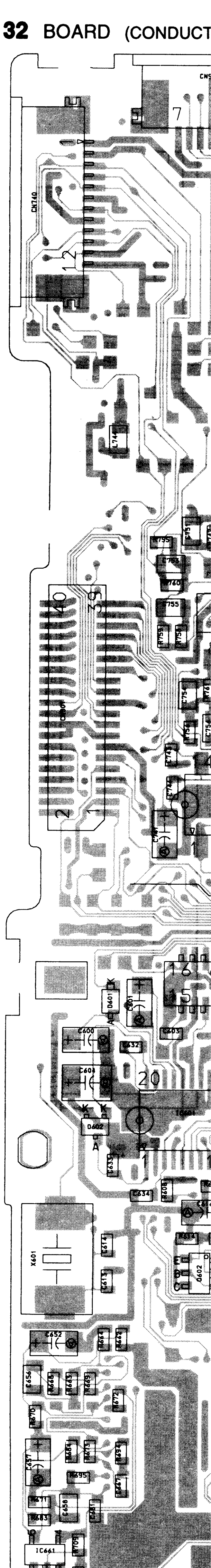
VC-132 (CAMERA, LENS, DRIVE, MODE CONTROL, LENS CONTROL), MF-244 (MANUAL FOCUS SWITCH), CD-105 (CCD IMAGER), YP-13 (LENS CONTROL) PRINTED

– Ref. No. VC-132 BOARD: 6,000 Series, MF-244 BOARD: 7,000 Series, CD-105 BOARD: 8,000 Series, YP-13 BOARD: 9,000 Series –

VC-132 BOARD (COMPONENT SIDE)

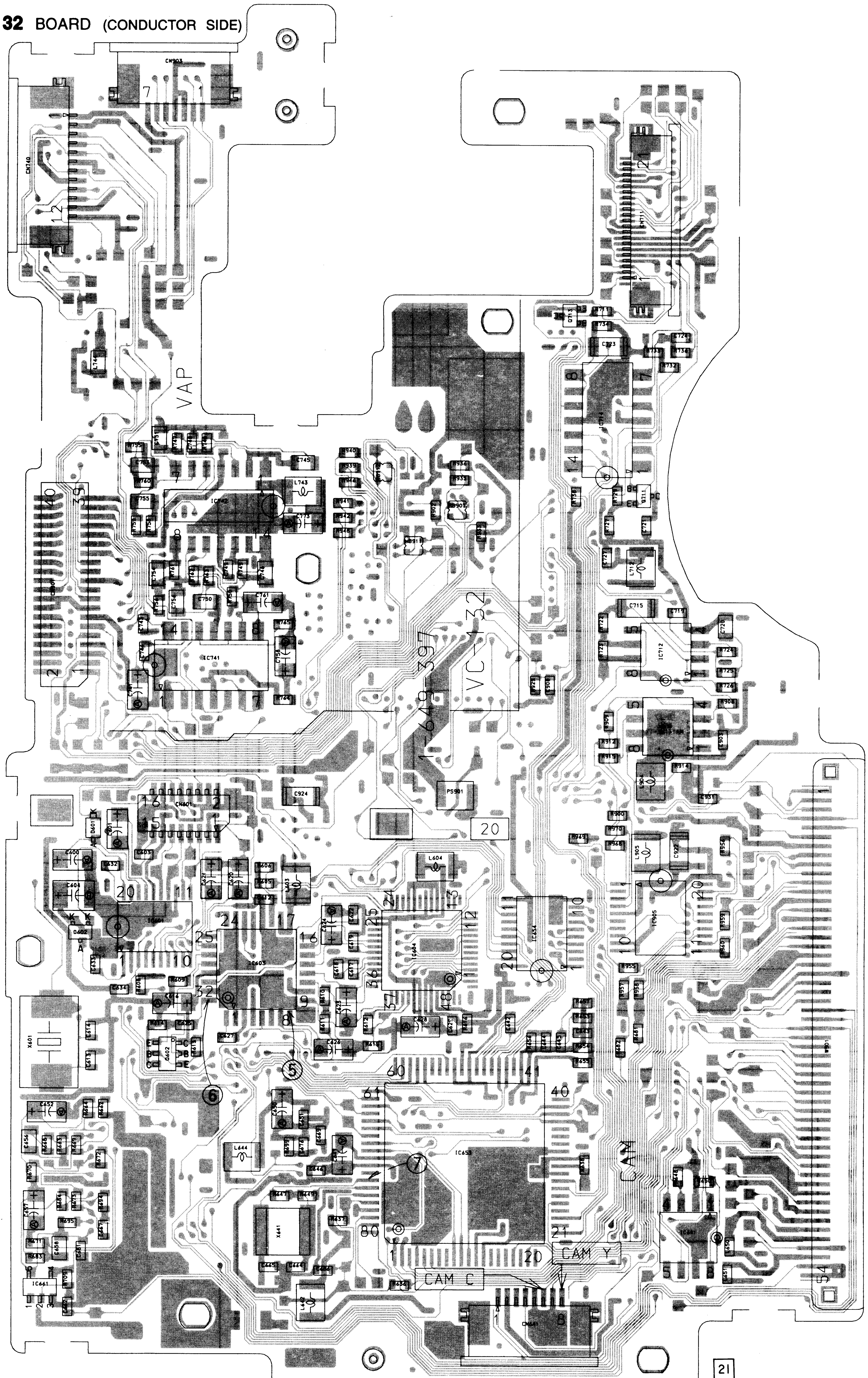

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
IC715
IC711
IC713
FL901
X901
IC902
IC903
IC904
IC745
IC743
IC740
IC744
CN743
IC655
IC652
IC602
IC601
IC662
FL643
VAP
CAM
1-649-397
VC-132
CHROMA
21

VC-132 BOARD (CONDUCT

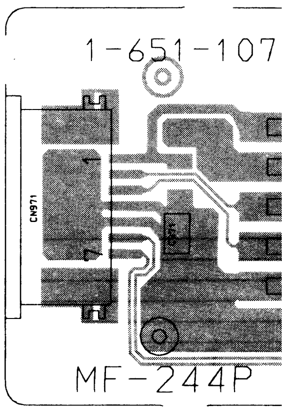

CN740
X601
IC661
8

13 (LENS CONTROL) PRINTED WIRING BOARD

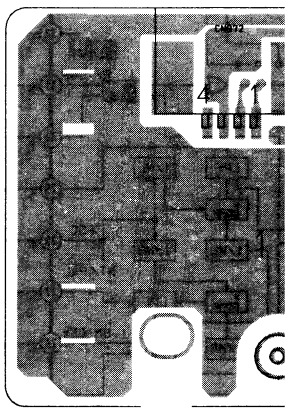
VC-132 BOARD (CONDUCTOR SIDE)


CN903
CN740
VAP
1-649-397
VC-132
IC741
IC742
IC711
IC712
IC603
IC604
IC654
IC905
IC651
CN601
CN641
X601
X641
PS901
20
21
CAM
CAM C
CAM Y
8
9
10
11
12
13
14
15
16

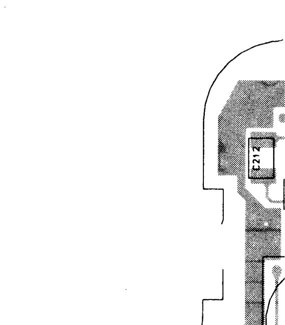
MF-244 BOARD (C

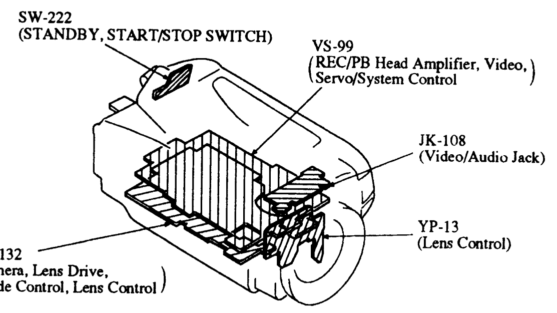

1-651-107
CN971
MF-244P

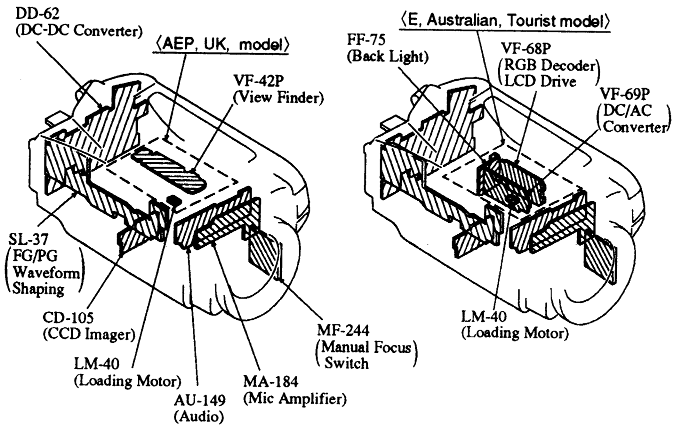
MF-244 BOARD (C



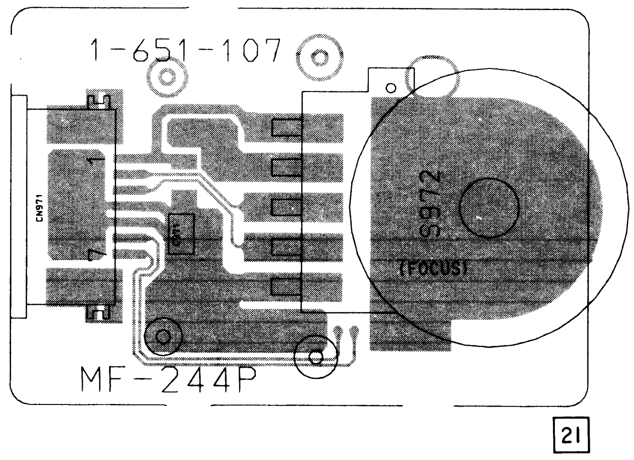
YP-13 BOARD



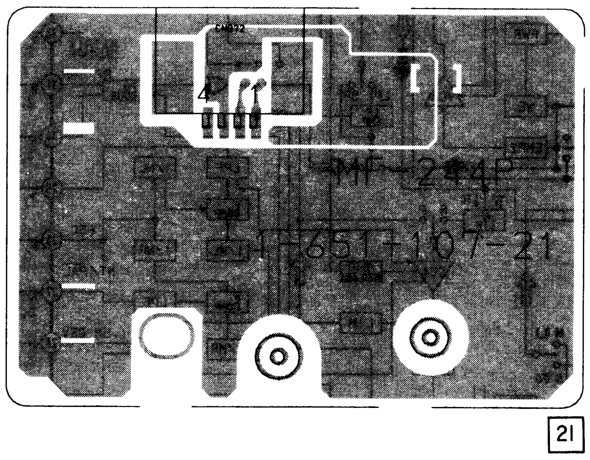

SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)


DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)
⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder LCD Drive)
VF-69P
(DC/AC Converter)
LM-40
(Loading Motor)

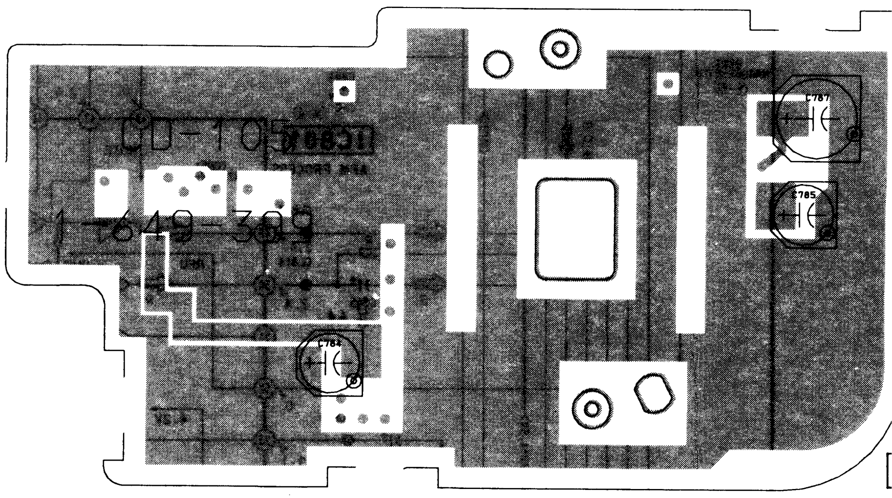
MF-244 BOARD (COMPONENT SIDE)

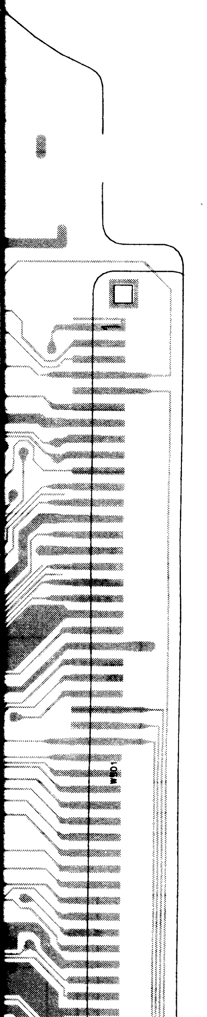

1-651-107
CN971
S972
(FOCUS)
MF-244P
21

MF-244 BOARD (CONDUCTOR SIDE)

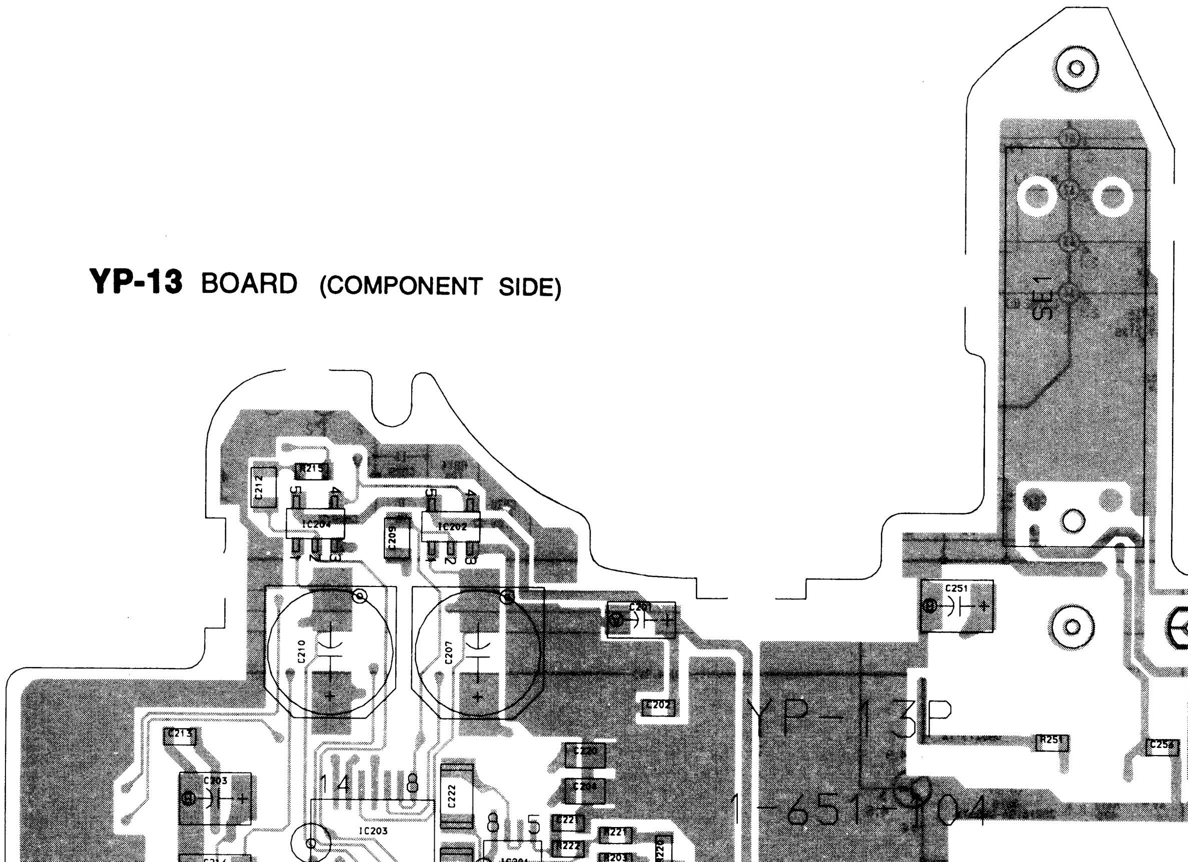

MF-244P
1-651-107-21
21

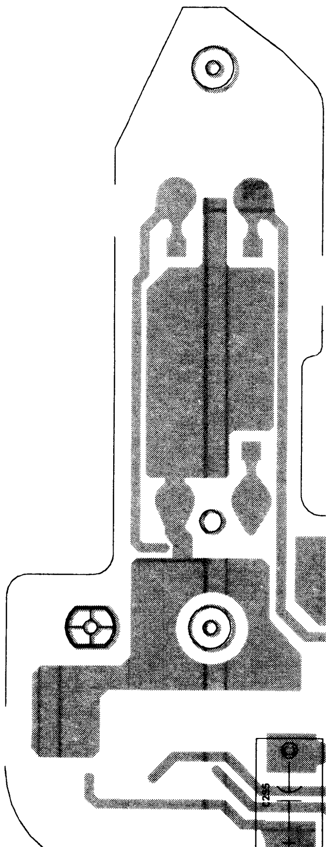
CD-105 BOARD (COMPONENT SIDE)


CD-105
1-649-309
C787
C785
C782

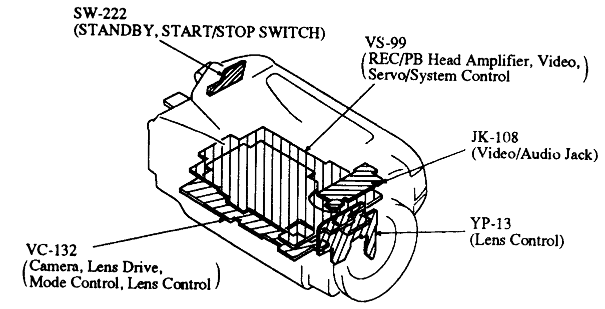


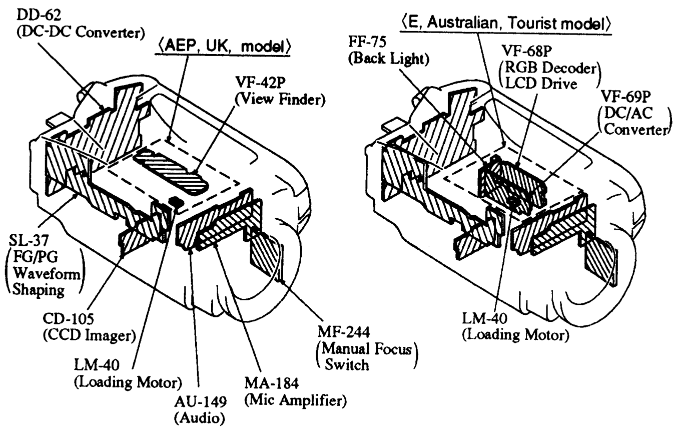
YP-13 BOARD (COMPONENT SIDE)


SE1
IC204
IC202
C210
C207
C251
C213
C203
C216
IC203
IC201
C205
C222
R251
C252
14
8
7
1
YP-13P
1-651-704
SENSOR
21

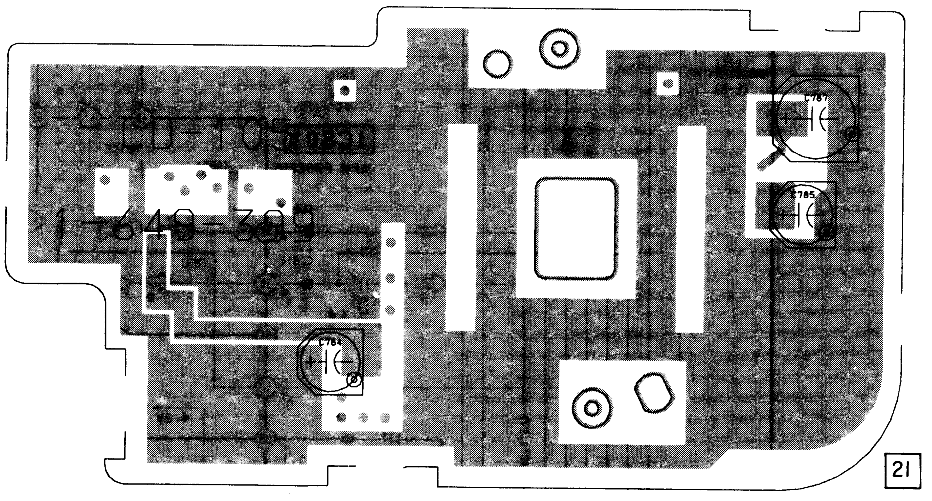


13 14 15 16 17 18 19 20 21

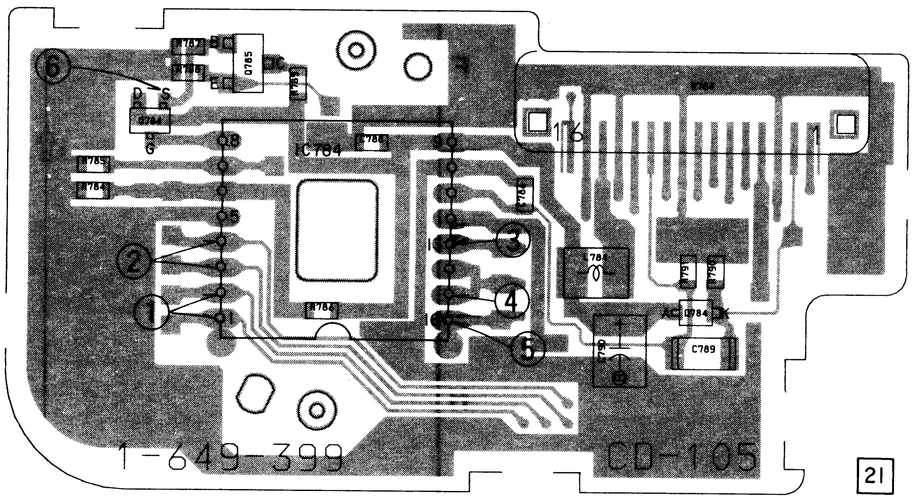

SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)


DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)
⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder LCD Drive)
VF-69P
(DC/AC Converter)
LM-40
(Loading Motor)

CD-105 BOARD (COMPONENT SIDE)


CD-105
1-649-399
C781
C785
C784
21

CD-105 BOARD (CONDUCTOR SIDE)


⑥
Q785
IC784
②
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③
④
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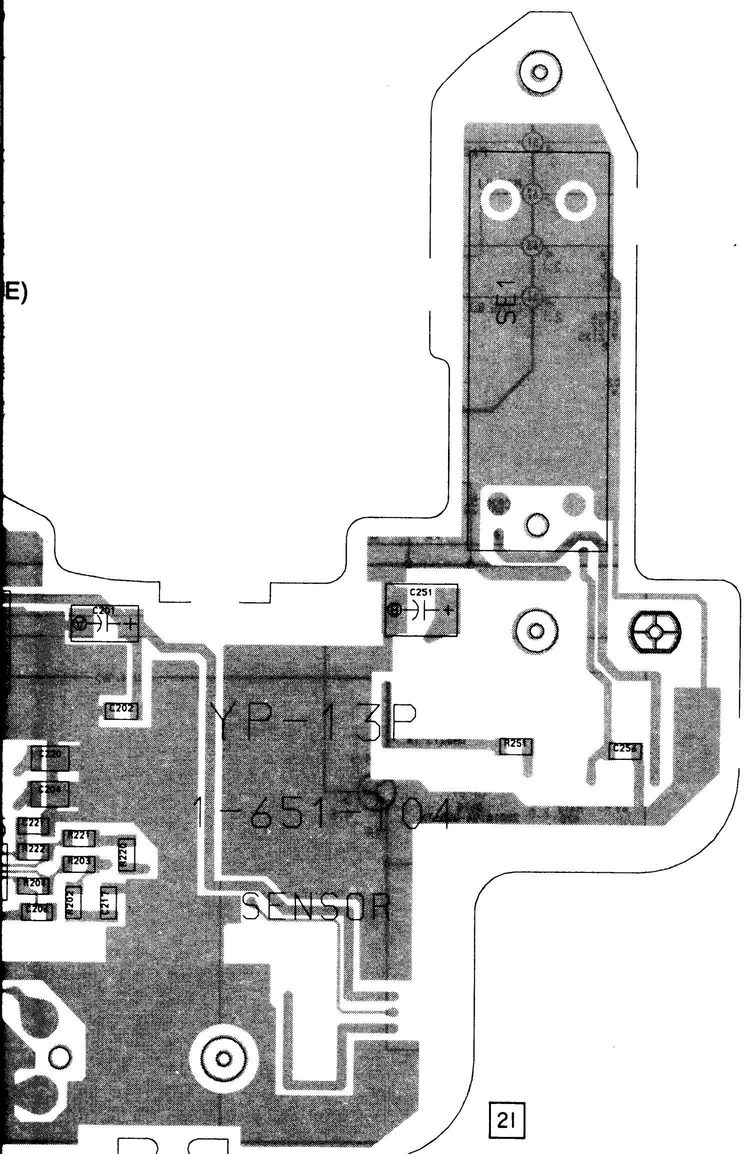
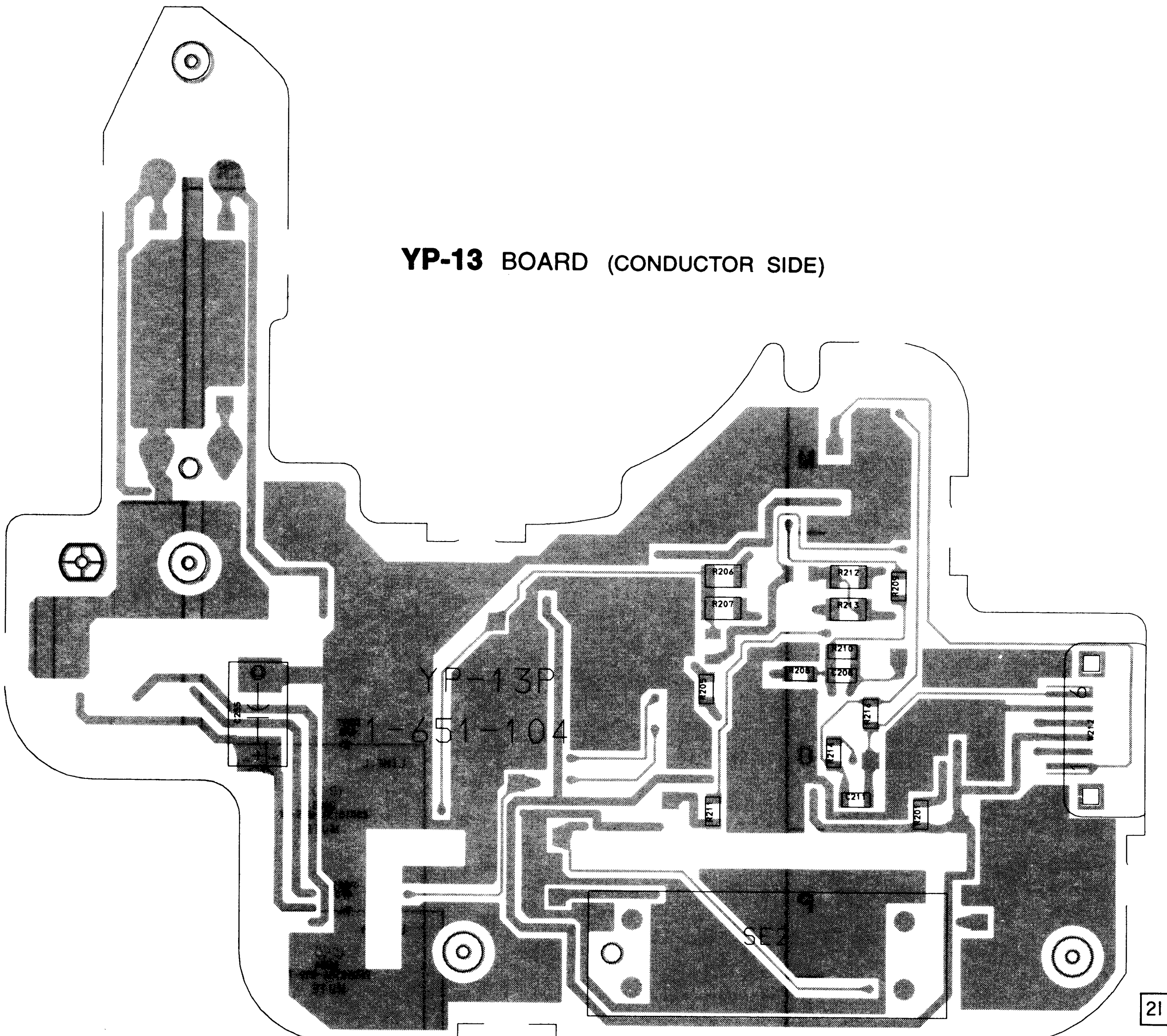
1
16
C789
D784
1-649-399
CD-105
21

E)


SE1
C251
C254
R251
YP-13P
1-651-104
SENSOR
21

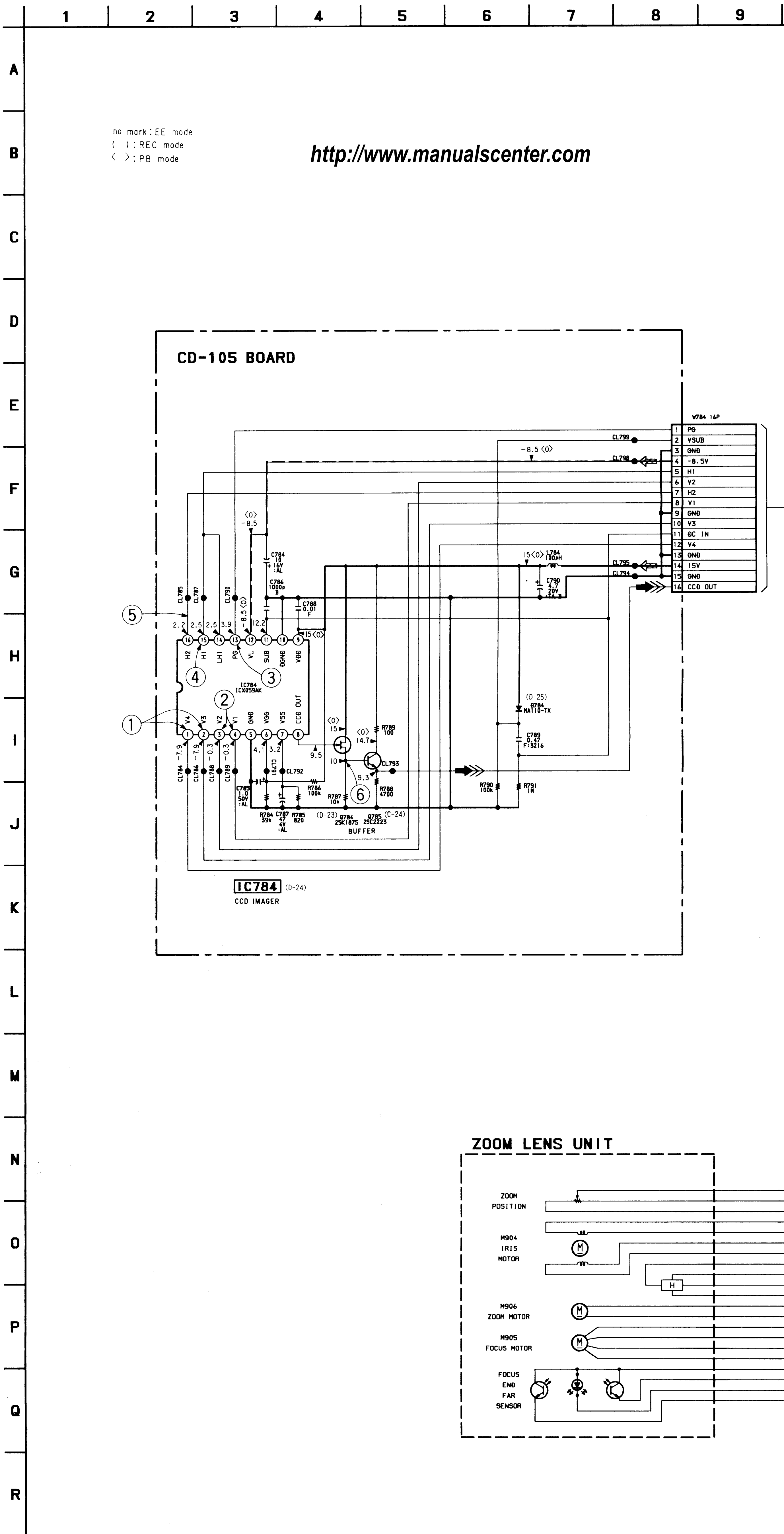
YP-13 BOARD (CONDUCTOR SIDE)


YP-13P
1-651-104
R206
R207
R212
R213
C204
R205
R201
SE1
21

18 19 20 21 22 23 24 25

VC-132 (CAMERA, LENS DRIVE), CD-105 (CCD IMAGER) SCHEMATIC DIAGRAM

– Ref. No. VC-132 BOARD: 6,000 Series, CD-105 BOARD: 8,000 Series –



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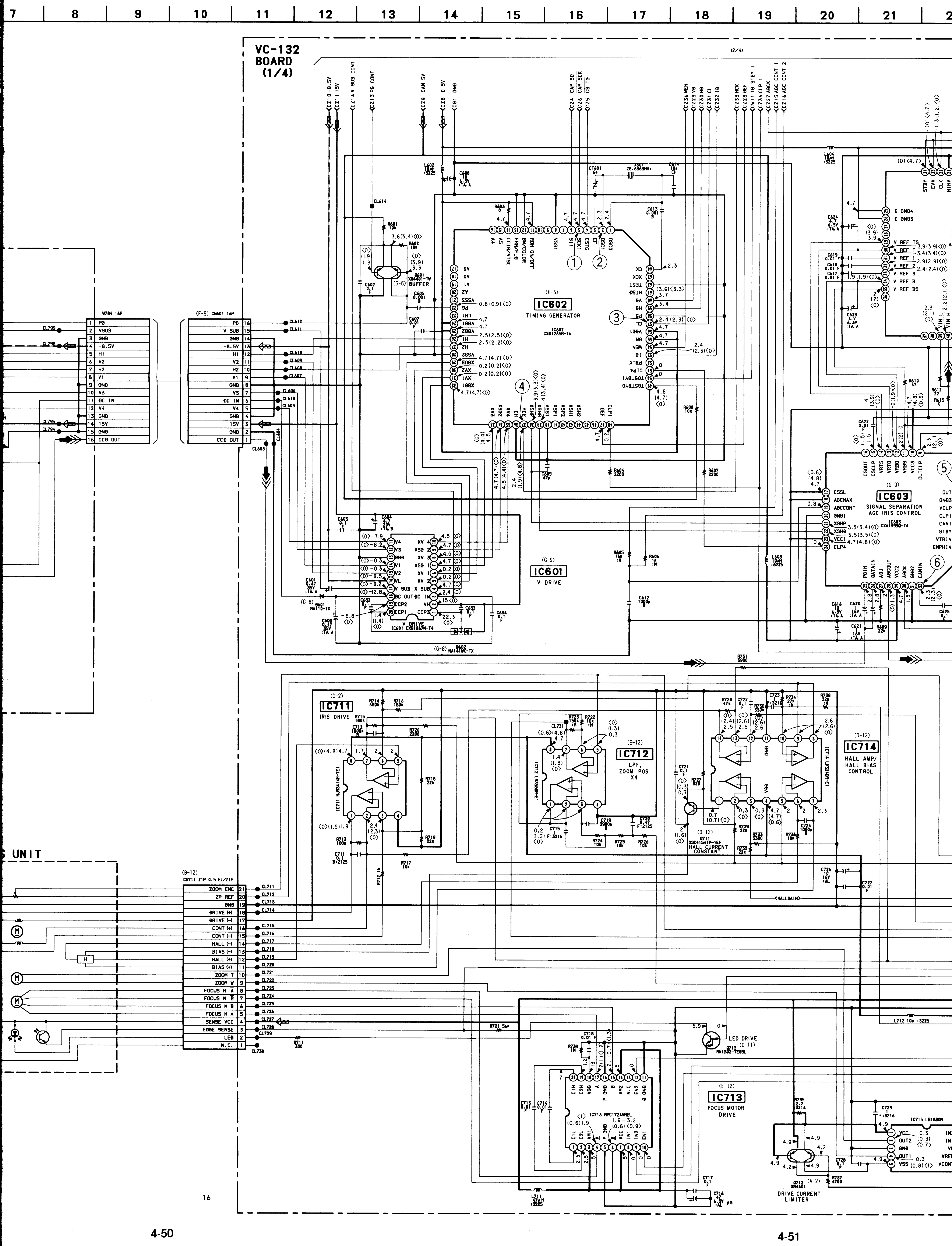
S
no mark : EE mode
( ) : REC mode
〈 〉 : PB mode
CD-105 BOARD
W784 16P
1 PG
2 VSUB
3 GND
4 -8.5V
5 H1
6 V2
7 H2
8 V1
9 GND
10 V3
11 DC IN
12 V4
13 GND
14 15V
15 GND
16 CCD OUT
CL799
CL798
CL795
CL794
-8.5 〈0〉
15〈0〉
L784 100µH
C790 4.7 20V
C784 10 16V :AL
C786 1000p B
C788 0.01 F
CL785
CL787
CL790
CL784
CL786
CL788
CL789
CL791
CL792
CL793
H2
H1
LH1
PG
VL
SUB
DGND
VDD
V4
V3
V2
V1
GND
VGG
VSS
CCD OUT
IC784 ICX059AK
C785 1.0 50V :AL
R784 39k
C787 47 4V :AL
R785 820
R786 100k
R787 10k
R788 4700
R789 100
(D-23) Q784 2SK1875
Q785 2SC2223 (C-24)
BUFFER
(D-25) D784 MA110-TX
C789 0.47 F:3216
R790 100k
R791 1M
IC784 (D-24)
CCD IMAGER
ZOOM LENS UNIT
ZOOM POSITION
M904 IRIS MOTOR
M906 ZOOM MOTOR
M905 FOCUS MOTOR
FOCUS END FAR SENSOR

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡»	
PB				

Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC784 on CD-105 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC653 on VC-132 board), and also written on the CCD data label put on the shield case (upper) of the DD-62 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-105 board supplied as the repair parts.
  When replacing the CD-105 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.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VC-132
BOARD
(1/4)
(2/4)
IC602
TIMING GENERATOR
IC602 CXD1265R-T6
IC601
V DRIVE
IC601 CXD1267N-T4
IC603
SIGNAL SEPARATION
AGC IRIS CONTROL
IC603 CXA1399Q-T4
IC711
IRIS DRIVE
IC711 NJM3414M-TE1
IC712
LPF,
ZOOM POS
X4
IC712 LM358M-E1
IC714
HALL AMP/
HALL BIAS
CONTROL
IC714 LM324M-E1
IC713
FOCUS MOTOR
DRIVE
IC713 MPC1724VMEL
IC715 LB1830M
Q601 XN4401-TW BUFFER
Q711 2SC4154TP-1EF HALL CURRENT CONSTANT
Q713 RN1302-TE85L LED DRIVE
Q712 XN4401 DRIVE CURRENT LIMITER
V DRIVE
W784 16P
(F-9) CN601 16P
PG
V SUB
GND
-8.5V
H1
V2
H2
V1
V3
OC IN
V4
15V
CCD OUT
(B-12) CN711 21P 0.5 EL/ZIF
ZOOM ENC
ZP REF
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
HALL (+)
BIAS (-)
HALL (-)
BIAS (+)
ZOOM T
ZOOM W
FOCUS M A
FOCUS M B
SENSE VCC
EDGE SENSE
LED
N.C.
S UNIT
CZ10 -8.5V
CZ11 15V
CZ14 V SUB CONT
CZ13 PG CONT
CZ9 CAM 5V
CZ8 D 5V
CG1 GND
CZ4 CAM SO
CZ6 CAM SCK
CZ5 CS TG
CZ36 WEN
CZ29 VD
CZ30 HD
CZ31 CL
CZ32 ID
CZ33 MCK
CZ28 DEF
CW11 TG STBY 1
CZ34 CLP 1
CZ27 ADCK
CZ15 AGC CONT 1
CZ16 AGC CONT 2
X601 28.6363MHz
L602 10μH
L604 10μH
L603 10μH
L711 47μH
L712 10μ
HALLGAIN
16
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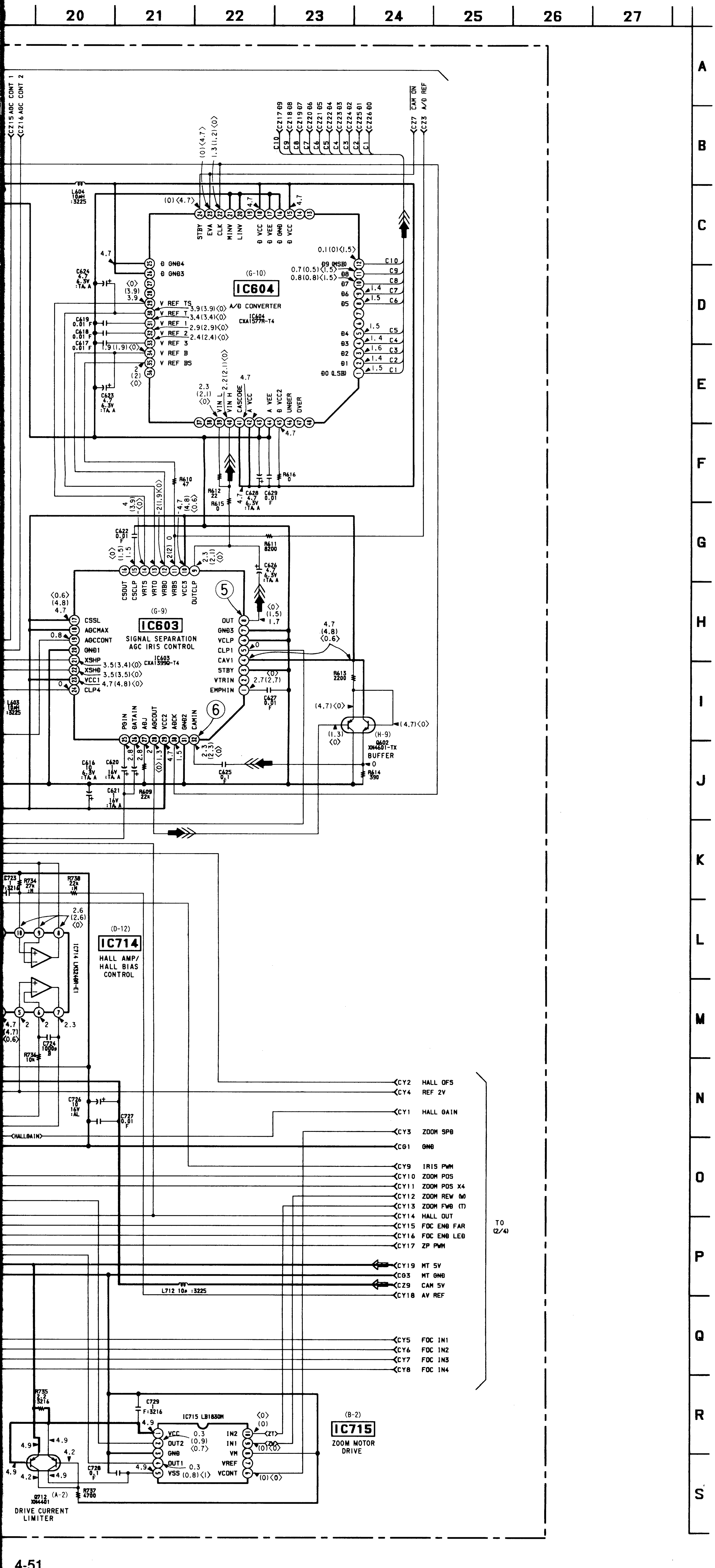
6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Q
R
S
CZ15 AGC CONT 1
CZ16 AGC CONT 2
CZ17 B9
CZ18 B8
CZ19 B7
CZ20 B6
CZ21 B5
CZ22 B4
CZ23 B3
CZ24 B2
CZ25 B1
CZ26 B0
CZ7 CAM ON
CZ3 A/D REF
L604 10mH :3225
(G-10)
IC604
A/D CONVERTER
IC604 CXA1577R-T4
STBY
EVA
CLK
MINV
LINV
B VCC
B VEE
B GND
B VCC
B GND4
B GND3
V REF TS
V REF T
V REF 1
V REF 2
V REF 3
V REF B
V REF BS
B9 (MSB)
B0 (LSB)
VIN L
VIN H
CASCODE
A VCC
A VEE
B VCC2
UNDER
OVER
C624 4.7 6.3V :TA A
C619 0.01 F
C618 0.01 F
C617 0.01 F
C623 4.7 6.3V :TA A
R610 47
R612 22
R615 0
C628 4.7 6.3V :TA A
C629 0.01 F
R616 0
C622 0.01 F
R611 8200
C626 4.7 6.3V :TA A
(G-9)
IC603
SIGNAL SEPARATION AGC IRIS CONTROL
IC603 CXA1399Q-T4
CSSL
AGCMAX
AGCCONT
GND1
XSHP
XSHD
VCC1
CLP4
CSOUT
CSCLP
VRTS
VRTO
VRBO
VRBS
VCC3
OUTCLP
OUT
GND3
VCLP
CLP1
CAV1
STBY
VTRIN
EMPHIN
PGIN
DATAIN
ADJ
AGCOUT
VCC2
ABCK
GND2
CAMIN
⑤
⑥
R613 2200
C627 0.01 F
Q602 XN4601-TX BUFFER
(H-9)
R614 390
C616 10 6.3V :TA A
C620 16V :TA A
C621 16V :TA A
R609 22k
C625 0.1 F
L603 10mH :3225
C723 F:3216
R734 27k :N
R738 22k :N
(D-12)
IC714
HALL AMP/ HALL BIAS CONTROL
IC714 LM3248MFT-E1
C724 1000p B
R734 10k
C726 10 16V :AL
C727 0.01 F
HALLGAIN
CY2 HALL OFS
CY4 REF 2V
CY1 HALL GAIN
CY3 ZOOM SPD
CG1 GND
CY9 IRIS PWM
CY10 ZOOM POS
CY11 ZOOM POS X4
CY12 ZOOM REW (W)
CY13 ZOOM FWD (T)
CY14 HALL OUT
CY15 FOC ENB FAR
CY16 FOC ENB LED
CY17 ZP PWM
TO (2/4)
CY19 MT 5V
CG3 MT GND
CZ9 CAM 5V
CY18 AV REF
L712 10μ :3225
CY5 FOC IN1
CY6 FOC IN2
CY7 FOC IN3
CY8 FOC IN4
R735 2.2 :3216
C729 F:3216
IC715 LB1830M
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
C728 0.1 F
(B-2)
IC715
ZOOM MOTOR DRIVE
Q712 XN4401
(A-2)
R737 4700
DRIVE CURRENT LIMITER

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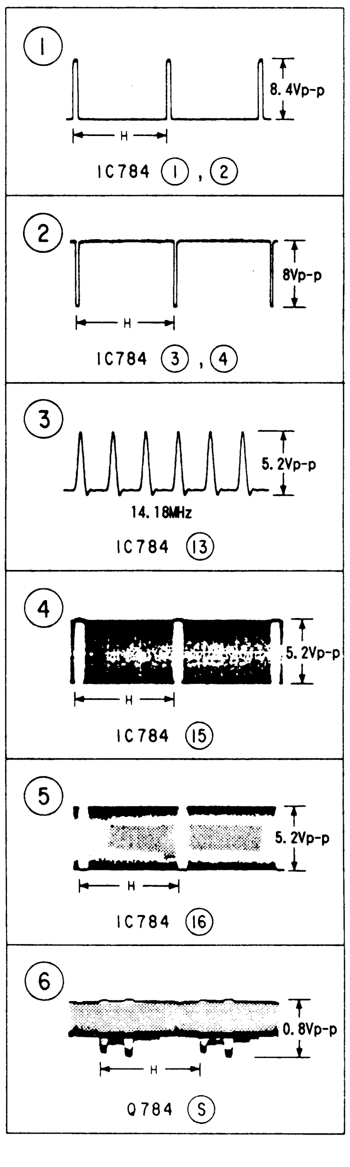
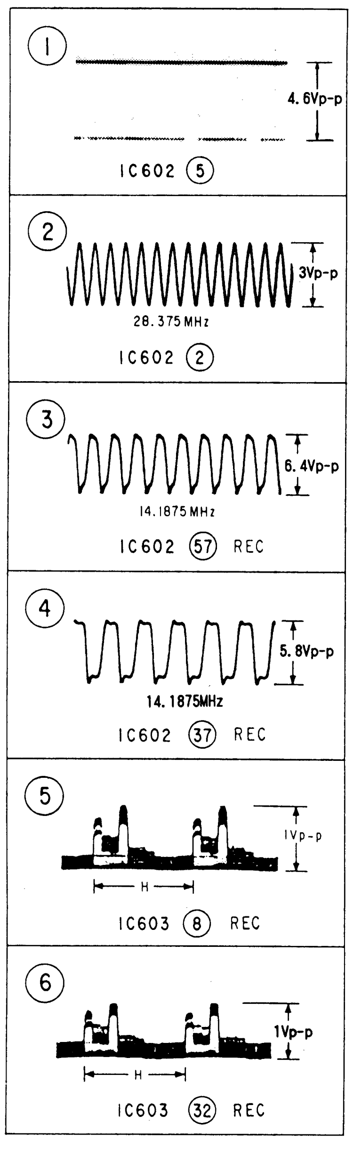
CD-105 BOARD

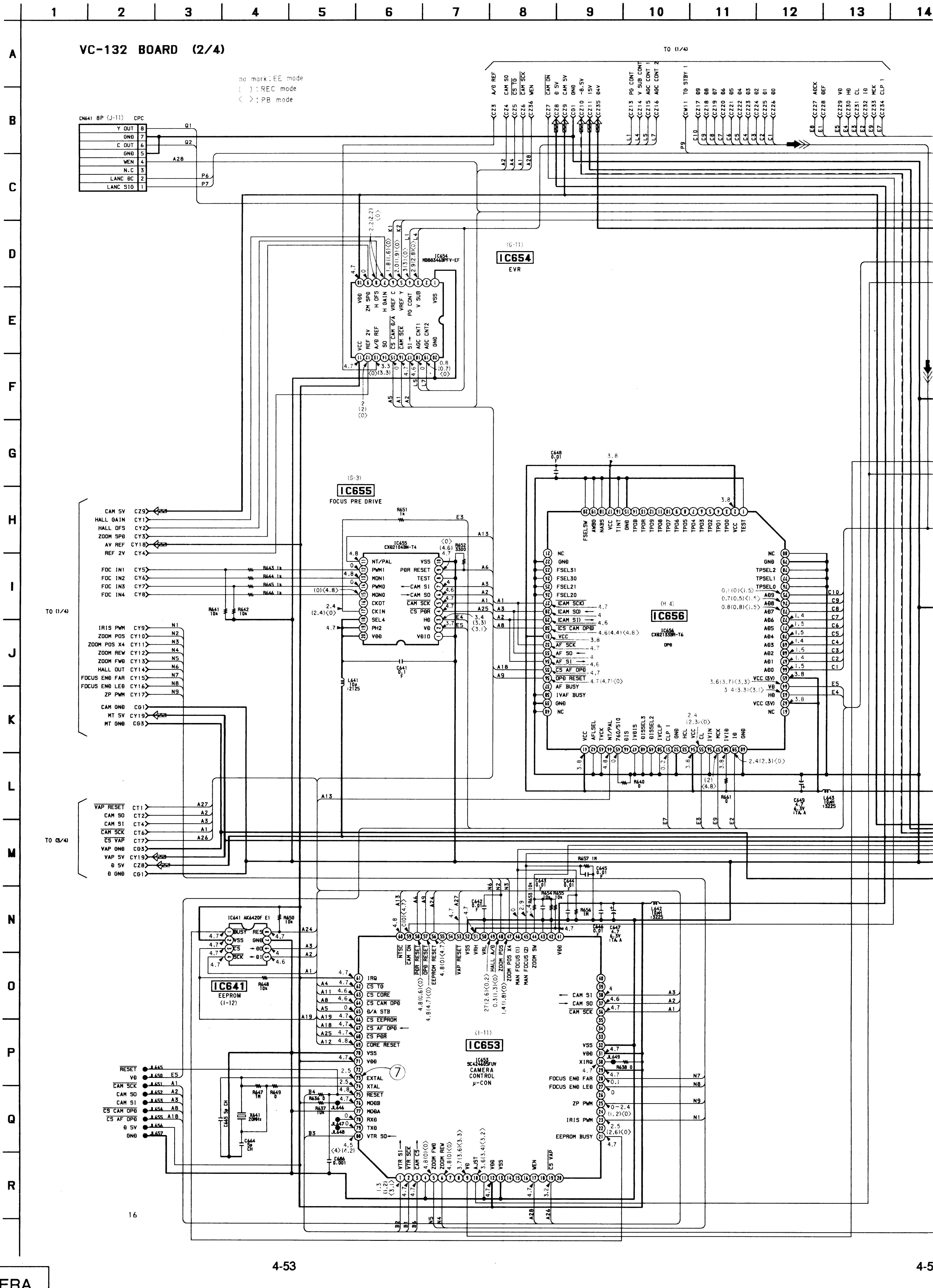


VC-132 BOARD



VC-132 (CAMERA) SCHEMATIC DIAGRAM • See page 4-44 for Printed wiring board.

– Ref. No. VC-132 BOARD: 6,000 Series, CD-105 BOARD: 8,000 Series –



VC-132 BOARD (2/4)
no mark : EE mode
( ) : REC mode
< > : PB mode
TO (1/4)
TO (3/4)
CN641 8P (J-11) CPC
Y OUT
GND
C OUT
GND
WEN
N.C
LANC DC
LANC SIG
IC654
MB88346BPFV-EF
IC654
EVR
IC655
FOCUS PRE DRIVE
IC655
CXD2104BN-T4
IC656
CXD2133BR-T6
OPD
IC641 AK6420F E1
IC641
EEPROM
IC653
SC424605FUV
CAMERA CONTROL µ-CON
IC653
CAM 5V
HALL GAIN
HALL OFS
ZOOM SPD
AV REF
REF 2V
FOC IN1
FOC IN2
FOC IN3
FOC IN4
IRIS PWM
ZOOM POS
ZOOM POS X4
ZOOM REW
ZOOM FWD
HALL OUT
FOCUS END FAR
FOCUS END LED
ZP PWM
CAM GND
MT 5V
MT GND
VAP RESET
CAM SO
CAM SI
CAM SCK
CS VAP
VAP GND
VAP 5V
D 5V
D GND
RESET
VD
CS CAM OPD
CS AF OPD
X641
20MHz
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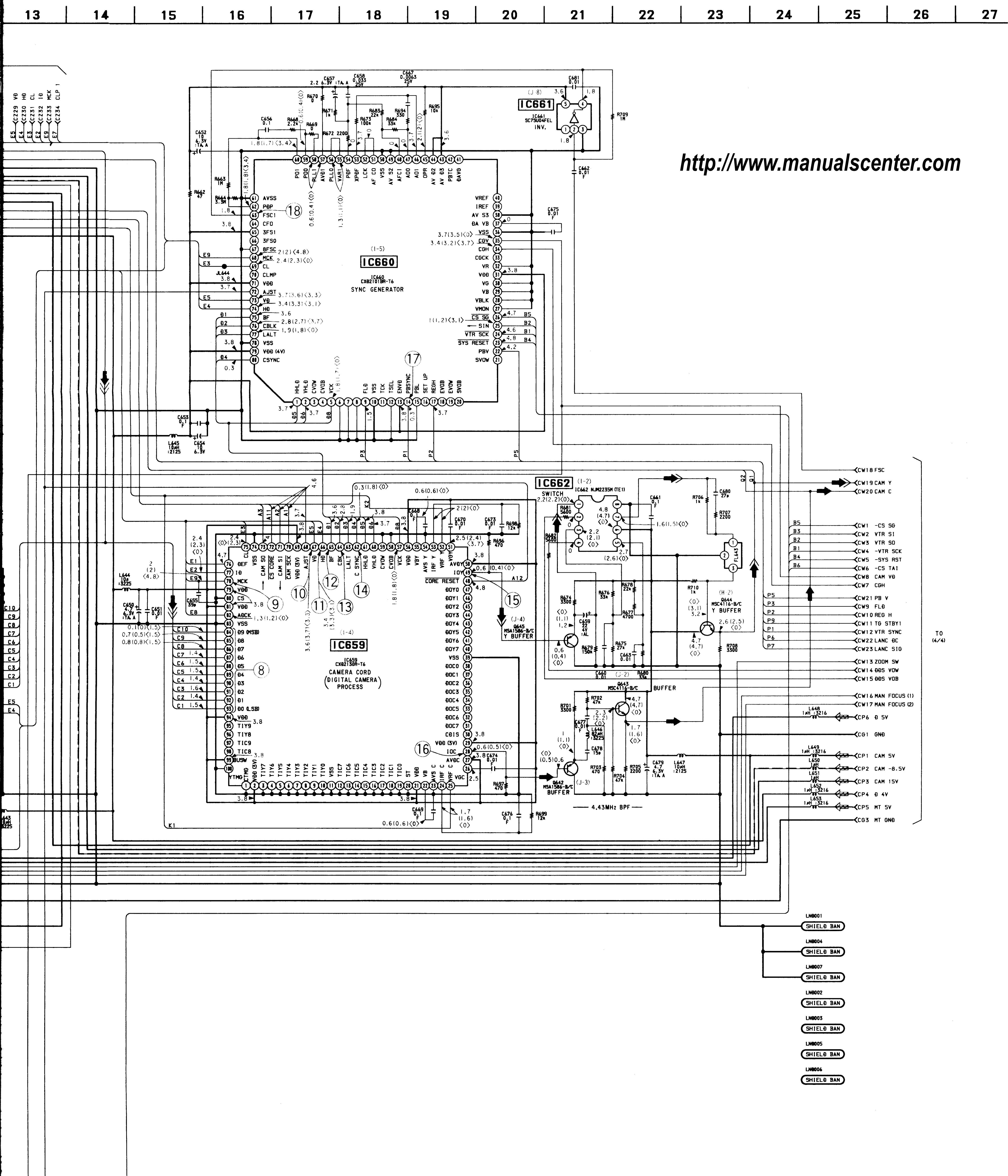
Q
R
16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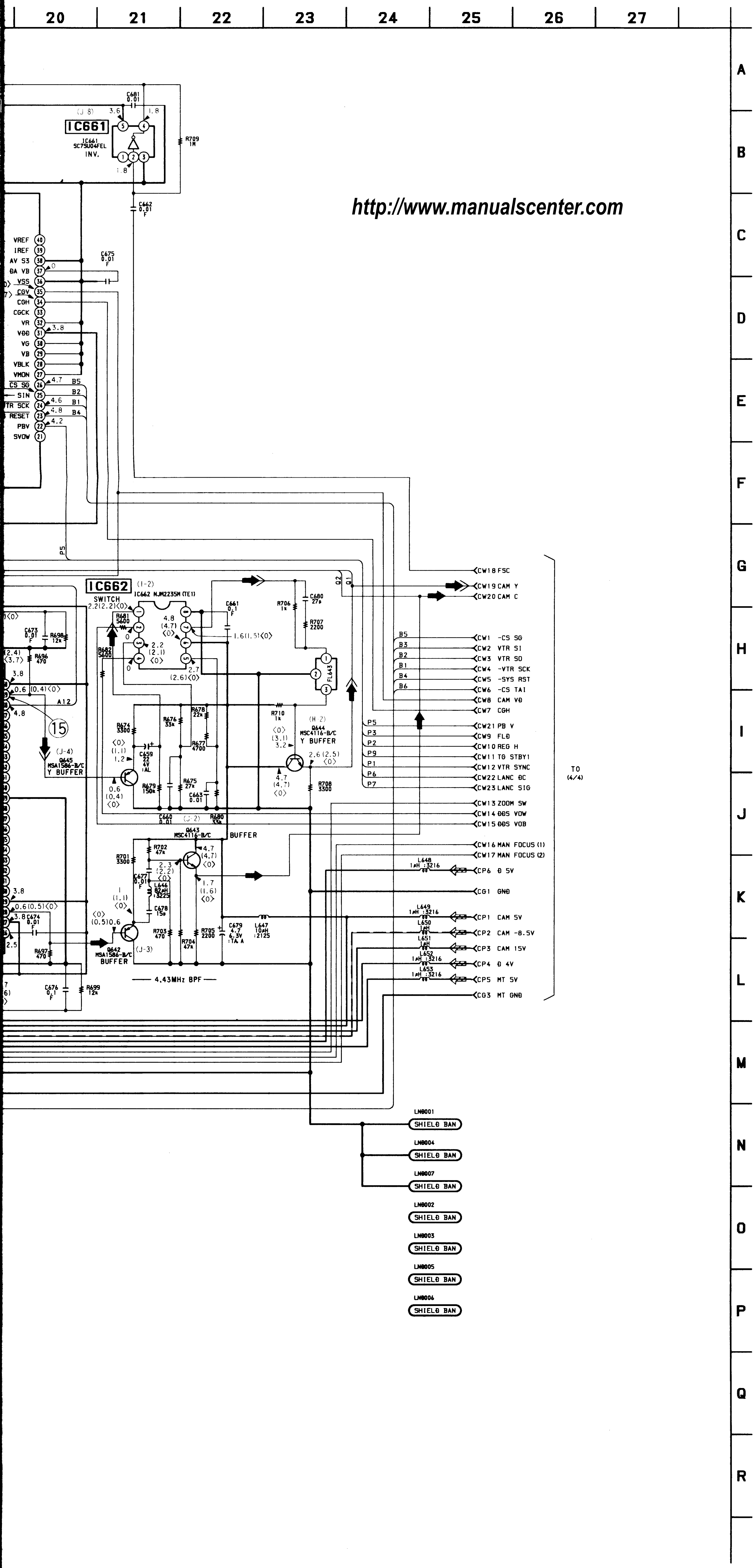
CZ29 VD
CZ30 HD
CZ31 CL
CZ32 ID
CZ33 MCK
CZ34 CLP 1
IC661
SC7SU04FEL
INV.
IC660
CXD2101BR-T6
SYNC GENERATOR
(1-5)
IC659
CXD2130R-T6
CAMERA CORD
(DIGITAL CAMERA PROCESS)
(1-4)
IC662
IC662 NJM2235M (TE1)
SWITCH
(1-2)
Q645
MSA1586-B/C
Y BUFFER
Q644
MSC4116-B/C
Y BUFFER
Q643
MSC4116-B/C
BUFFER
Q642
MSA1586-B/C
BUFFER
4.43MHz BPF
FL643
CW18 FSC
CW19 CAM Y
CW20 CAM C
CW1 -CS SG
CW2 VTR SI
CW3 VTR SO
CW4 -VTR SCK
CW5 -SYS RST
CW6 -CS TAI
CW8 CAM VD
CW7 CGH
CW21 PB V
CW9 FLD
CW10 REG H
CW11 TG STBY1
CW12 VTR SYNC
CW22 LANC DC
CW23 LANC SIG
CW13 ZOOM SW
CW14 DDS VDW
CW15 DDS VDB
CW16 MAN FOCUS (1)
CW17 MAN FOCUS (2)
CP6 D 5V
CG1 GND
CP1 CAM 5V
CP2 CAM -8.5V
CP3 CAM 15V
CP4 D 4V
CP5 MT 5V
CG3 MT GND
TO (4/4)
LN8001
SHIELD BAN
LN8004
SHIELD BAN
LN8007
SHIELD BAN
LN8002
SHIELD BAN
LN8003
SHIELD BAN
LN8005
SHIELD BAN
LN8006
SHIELD BAN



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IC661
IC661 SC7SU04FEL INV.
C681 0.01
R709 1M
C662 0.01 F
C675 0.01 F
VREF
IREF
AV S3
BA VB
VSS
CGV
CGH
CGCK
VR
VDD
VG
VB
VBLK
VMON
CS SG
SIN
TR SCK
RESET
PBV
SVDW
IC662
IC662 NJM2235M (TE1)
SWITCH
FL643
Q644 MSC4116-B/C Y BUFFER
Q645 MSA1586-B/C Y BUFFER
Q643 MSC4116-B/C BUFFER
Q642 MSA1586-B/C BUFFER
4.43MHz BPF
CW18 FSC
CW19 CAM Y
CW20 CAM C
CW1 -CS SG
CW2 VTR SI
CW3 VTR SO
CW4 -VTR SCK
CW5 -SYS RST
CW6 -CS TA1
CW8 CAM VD
CW7 CGH
CW21 PB V
CW9 FLD
CW10 REG H
CW11 TG STBY1
CW12 VTR SYNC
CW22 LANC DC
CW23 LANC SIG
CW13 ZOOM SW
CW14 DDS VDW
CW15 DDS VDB
CW16 MAN FOCUS (1)
CW17 MAN FOCUS (2)
CP6 D 5V
CG1 GND
CP1 CAM 5V
CP2 CAM -8.5V
CP3 CAM 15V
CP4 D 4V
CP5 MT 5V
CG3 MT GND
TO (4/4)
LM8001 SHIELD BAN
LM8004 SHIELD BAN
LM8007 SHIELD BAN
LM8002 SHIELD BAN
LM8003 SHIELD BAN
LM8005 SHIELD BAN
LM8006 SHIELD BAN

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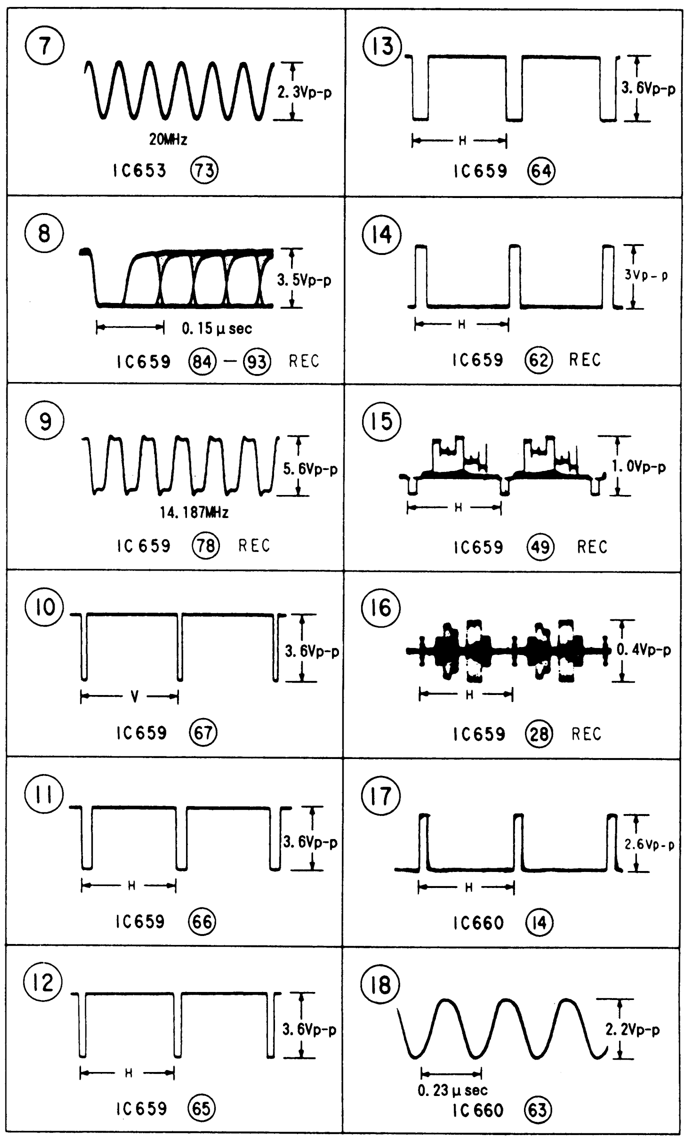
VC-132 BOARD



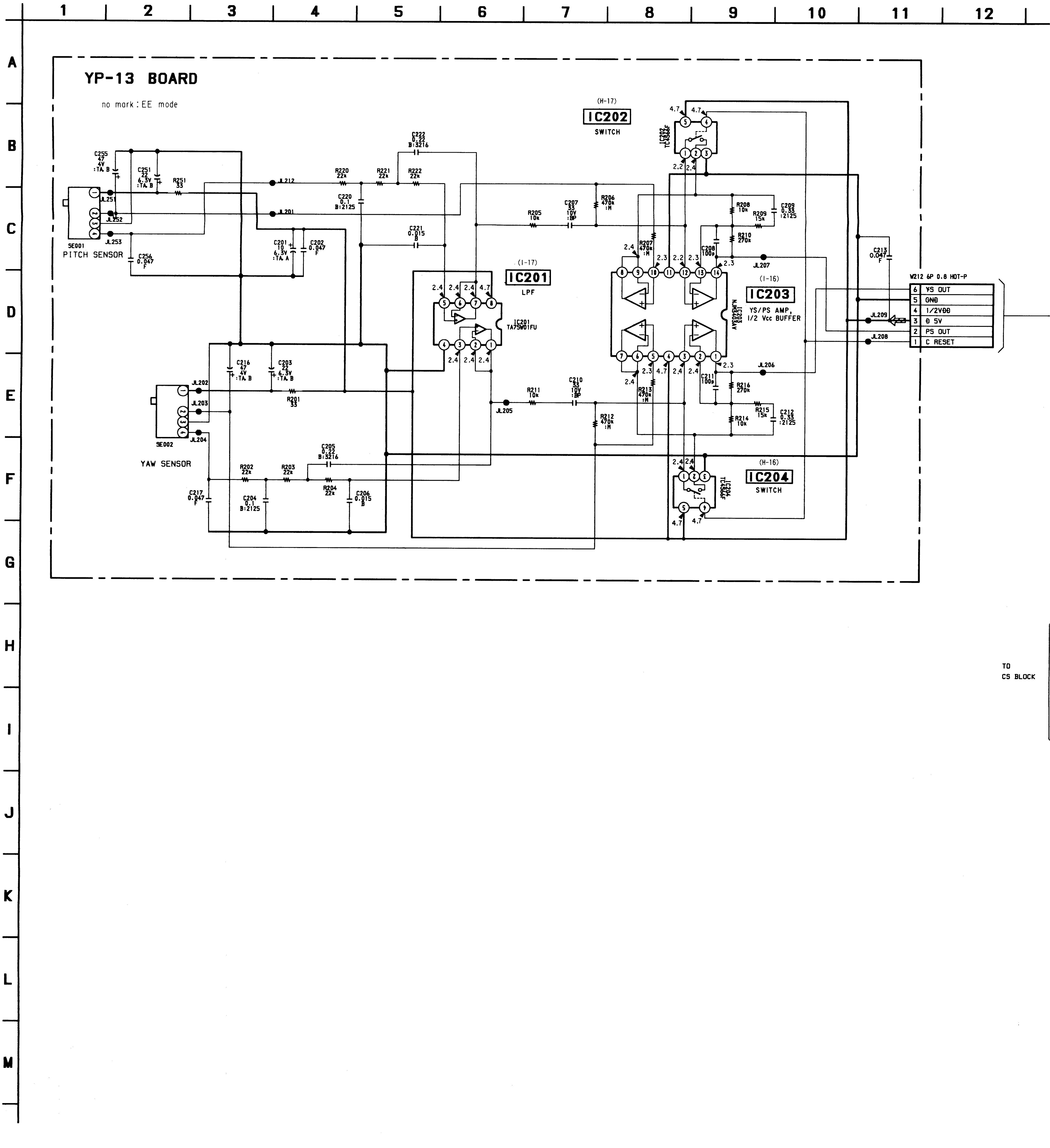
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡〉	➡〉〉	
PB				

VC-132 (LENS CONTROL), YP-13 (LENS CONTROL) SCHEMATIC DIAGRAM

- See page 4-44 for Printed wiring board.

– Ref. No. VC-132 BOARD: 6,000 Series, YP-13 BOARD: 9,000 Series –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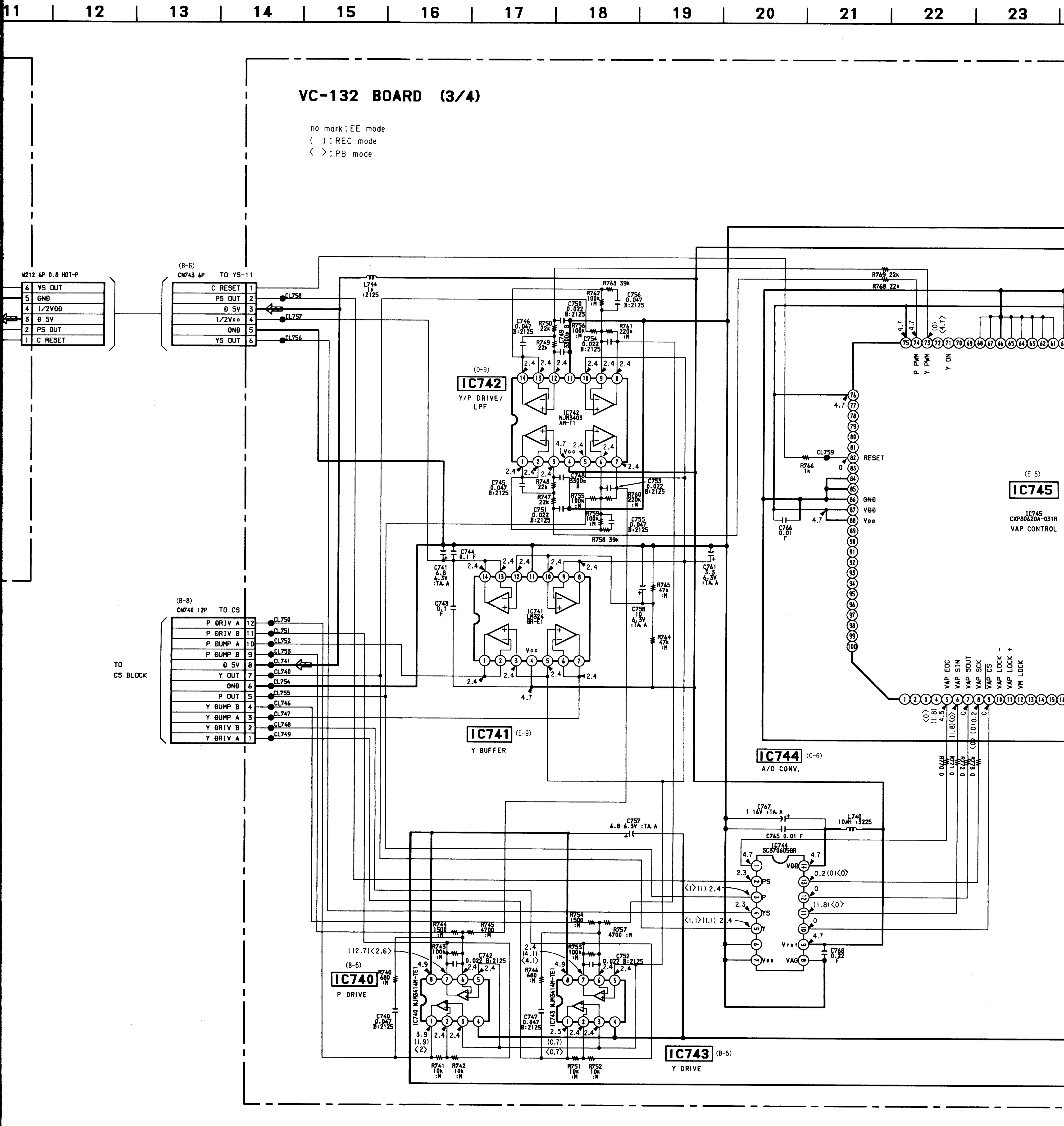
M
YP-13 BOARD
no mark : EE mode
C255 47 4V :TA B
C251 22 6.3V :TA B
R251 33
JL251
JL252
JL253
SE001
PITCH SENSOR
C256 0.047 F
JL212
JL201
R220 22k
R221 22k
R222 22k
C222 0.22 B:3216
C220 0.1 B:2125
C221 0.015 B
C201 10 6.3V :TA A
C202 0.047 F
(I-17)
IC201
LPF
IC201 TA75W01FU
C216 47 4V :TA B
C203 22 6.3V :TA B
JL202
JL203
JL204
R201 33
SE002
YAW SENSOR
R202 22k
R203 22k
R204 22k
C205 0.22 B:3216
C217 0.047 F
C204 0.1 B:2125
C206 0.015 B
JL205
R205 10k
C207 33 10V :BP
R206 470k :M
R211 10k
C210 33 10V :BP
R212 470k :M
(H-17)
IC202
SWITCH
IC202 TC4S66F
(I-16)
IC203
YS/PS AMP, 1/2 Vcc BUFFER
IC203 NJM3403AV
R207 470k :M
R208 10k
R209 15k
C209 0.33 :2125
R210 270k
C208 100p
JL207
C211 100p
R213 470k :M
R216 270k
R215 15k
R214 10k
C212 0.33 :2125
JL206
(H-16)
IC204
SWITCH
IC204 TC4S66F
C213 0.047 F
JL209
JL208
W212 6P 0.8 HOT-P
6 YS OUT
5 GND
4 1/2VDD
3 D 5V
2 PS OUT
1 C RESET
TO CS BLOCK
2.2
2.3
2.4
4.7



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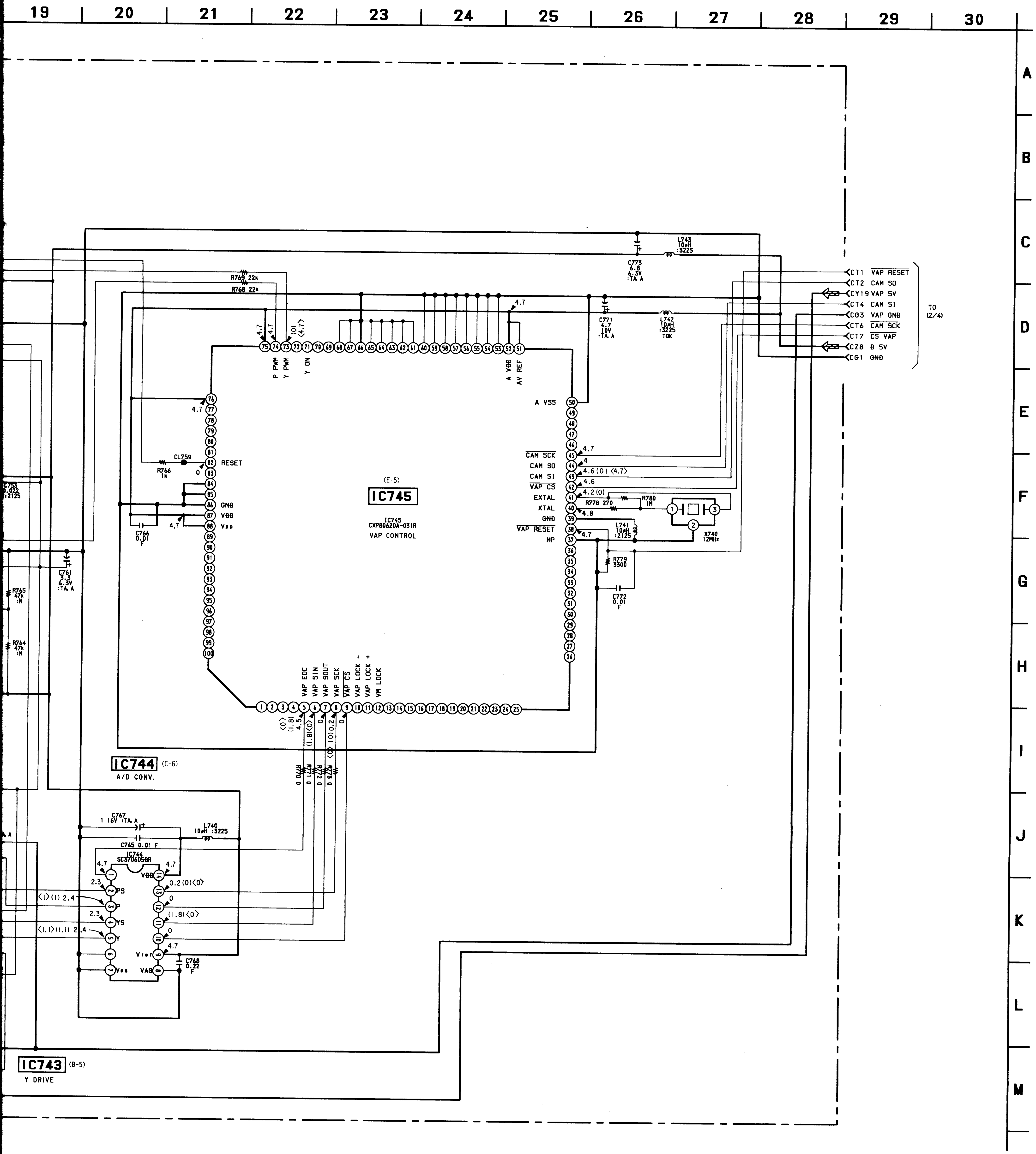
23
VC-132 BOARD (3/4)
no mark : EE mode
( ) : REC mode
〈 〉 : PB mode
W212 6P 0.8 HOT-P
6 YS OUT
5 GND
4 1/2VDD
3 B 5V
2 PS OUT
1 C RESET
(B-6)
CN743 6P TO YS-11
C RESET 1
PS OUT 2
B 5V 3
1/2Vcc 4
GND 5
YS OUT 6
CL758
CL757
CL756
L744
:2125
IC742
Y/P DRIVE/
LPF
(D-9)
IC742
NJM3403
AM-T1
R763 39k
R762 100k :M
C756 0.047 B:2125
C750 0.022 B:2125
C746 0.047 B:2125
R750 22k
R749 22k
C749 3300p B
R756 100k :M
C754 0.022 B:2125
R761 220k :M
C745 0.047 B:2125
R748 22k
R747 22k
C748 3300p B
R755 100k :M
C751 0.022 B:2125
R759 100k :M
C753 0.022 B:2125
R760 220k :M
C755 0.047 B:2125
R758 39k
C744 0.1 F
C741 6.8 6.3V :TA A
C743 0.1 F
IC741
LM324
BR-E1
Vcc
R765 47k :M
R764 47k :M
C758 10 6.3V :TA A
C761 3.3 6.3V :TA A
IC741 (E-9)
Y BUFFER
(B-8)
CN740 12P TO CS
P DRIV A 12
P DRIV B 11
P DUMP A 10
P DUMP B 9
B 5V 8
Y OUT 7
GND 6
P OUT 5
Y DUMP B 4
Y DUMP A 3
Y DRIV B 2
Y DRIV A 1
CL750
CL751
CL752
CL753
CL741
CL740
CL754
CL755
CL746
CL747
CL748
CL749
TO
CS BLOCK
R769 22k
R768 22k
P PWM
Y PWM
Y ON
RESET
CL759
R766 1k
GND
VDD
Vpp
C766 0.01 F
(E-5)
IC745
IC745
CXP80620A-031R
VAP CONTROL
VAP EDC
VAP SIN
VAP SOUT
VAP SCK
VAP CS
VAP LOCK -
VAP LOCK +
VM LOCK
R770
R771
R772
R773
IC744 (C-6)
A/D CONV.
C767 1 16V :TA A
C765 0.01 F
L740 10μH :3225
IC744
SC370605BR
VDD
PS
P
YS
Y
Vref
Vss
VAG
C768 0.22 F
C757 6.8 6.3V :TA A
R744 1500
R745 4700 :M
R743 100k :M
C742 0.022 B:2125
(B-6)
IC740
P DRIVE
R740 680 :M
C740 0.047 B:2125
IC740 NJM3414M-TE1
R741 10k :M
R742 10k :M
R754 1500
R757 4700 :M
R753 100k :M
C752 0.022 B:2125
R746 680 :M
C747 0.047 B:2125
IC743 NJM3414M-TE1
R751 10k :M
R752 10k :M
IC743 (B-5)
Y DRIVE


19
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25
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27
28
29
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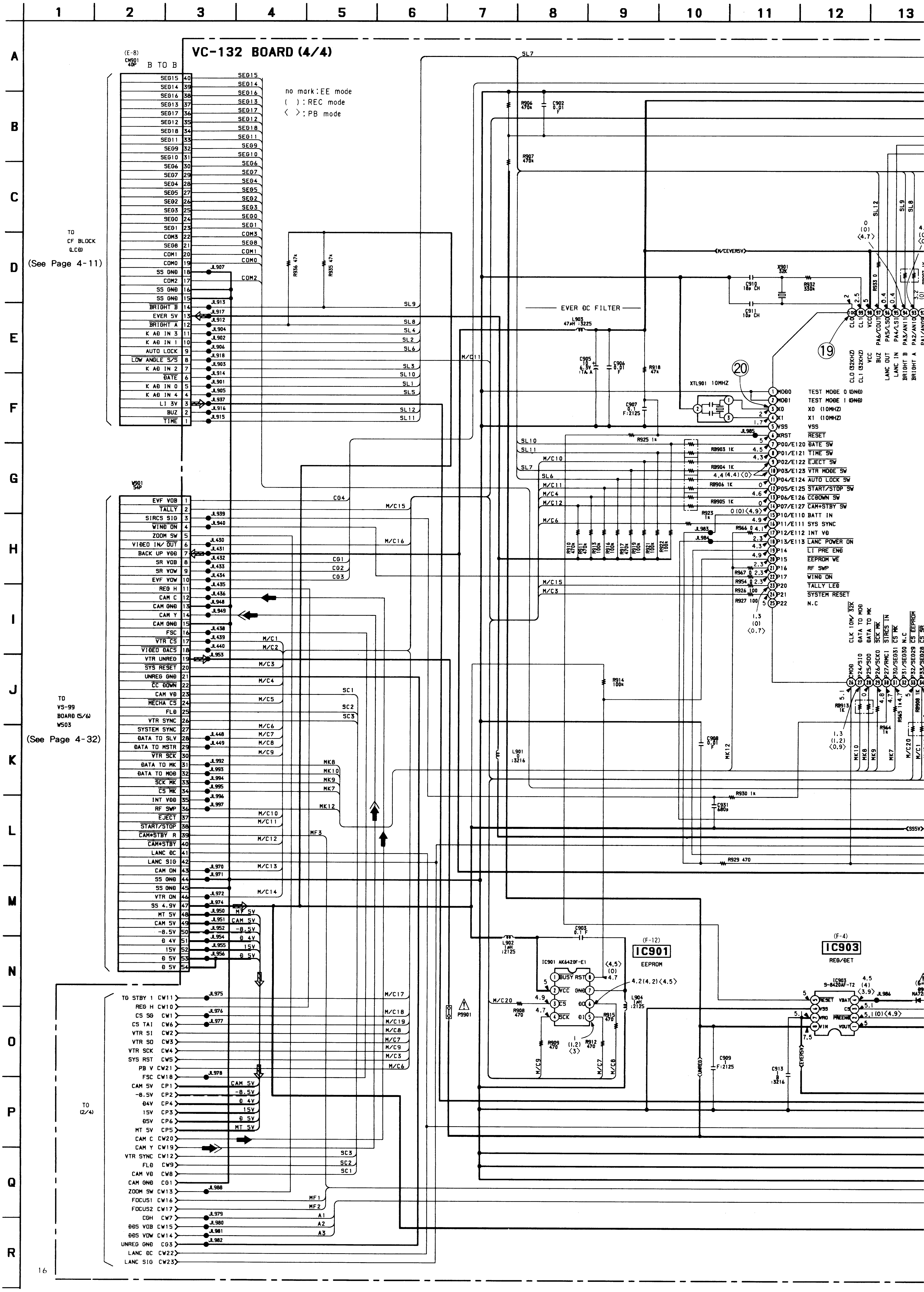
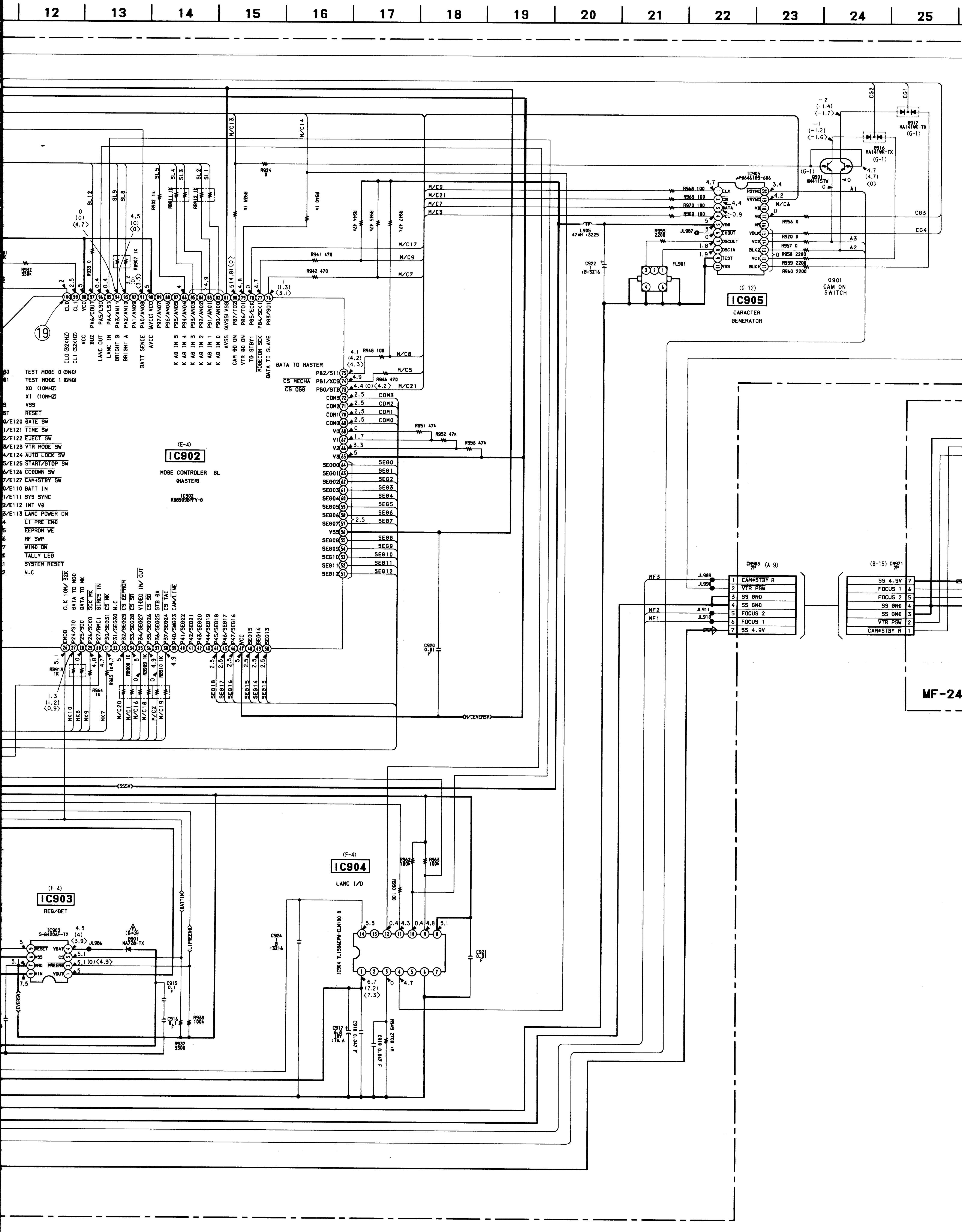
A
B
C
D
E
F
G
H
I
J
K
L
M
IC745
(E-5)
IC745 CXP80620A-031R
VAP CONTROL
P PWM
Y PWM
Y ON
A VDD
AV REF
A VSS
RESET
GND
VDD
Vpp
CAM SCK
CAM SO
CAM SI
VAP CS
EXTAL
XTAL
GND
VAP RESET
MP
VAP EOC
VAP SIN
VAP SOUT
VAP SCK
VAP CS
VAP LOCK -
VAP LOCK +
VM LOCK
R769 22k
R768 22k
CL759
R766 1k
C766 0.01 F
C773 6.8 6.3V :TA A
L743 10μH :3225
C771 4.7 10V :TA A
L742 10μH :3225 TDK
R778 270
R780 1M
L741 10μH :2125
X740 12MHz
R779 3300
C772 0.01 F
CT1 VAP RESET
CT2 CAM SO
CY19 VAP 5V
CT4 CAM SI
CG3 VAP GND
CT6 CAM SCK
CT7 CS VAP
CZ8 B 5V
CG1 GND
TO (2/4)
IC744 (C-6)
A/D CONV.
C767 1 16V :TA A
L740 10μH :3225
C765 0.01 F
IC744 SC370605BR
VDD
PS
P
YS
Y
Vref
Vss
VAG
C768 0.22 F
R770 0
R771 0
R772 0
R773 0
C761 3.3 6.3V :TA A
R765 47k :M
R764 47k :M
C753 .022 :2125
IC743 (B-5)
Y DRIVE
4.7
(0) <4.7>
4.6 (0) <4.7>
4.2 (0)
4.8
<0> (1.8) 4.5
(1.8) <0>
(0) 0.2 <0>
0.2 (0) <0>
<1> (1) 2.4
<1.1> (1.1) 2.4
2.3
(1.8) <0>

VC-132 (MODE CONTROL), MF-244 (MANUAL FOCUS SWITCH) SCHEMATIC DIAGRAM

- See page 4-44 for Printed wiring board.

– Ref. No. VC-132 BOARD: 6,000 Series, MF-244 BOARD: 7,000 Series –


VC-132 BOARD (4/4)
no mark : EE mode
( ) : REC mode
< > : PB mode
(E-8) CN901 40P B TO B
TO CF BLOCK (LCD)
(See Page 4-11)
W901 54P
TO VS-99 BOARD (5/6) W503
(See Page 4-32)
TO (2/4)
EVER DC FILTER
XTL901 10MHZ
X901 32K
IC901 AK6420F-E1
IC901 EEPROM
IC903 REG/DET
IC903 S-8420AF-T2
TEST MODE 0 (GND)
TEST MODE 1 (GND)
X0 (10MHZ)
X1 (10MHZ)
VSS
RESET
DATE SW
TIME SW
EJECT SW
VTR MODE SW
AUTO LOCK SW
START/STOP SW
CCDOWN SW
CAM+STBY SW
BATT IN
SYS SYNC
INT VD
LANC POWER ON
LI PRE END
EEPROM WE
RF SWP
WIND ON
TALLY LED
SYSTEM RESET
N.C
SEG15
SEG14
SEG16
SEG13
SEG17
SEG12
SEG18
SEG11
SEG9
SEG10
SEG6
SEG7
SEG4
SEG5
SEG2
SEG3
SEG0
SEG1
COM3
SEG8
COM1
COM0
SS GND
COM2
BRIGHT B
EVER 5V
BRIGHT A
K AD IN 3
K AD IN 1
AUTO LOCK
LOW ANGLE S/S
K AD IN 2
DATE
K AD IN 0
K AD IN 4
LI 3V
BUZ
TIME
EVF VDD
TALLY
SIRCS SIG
WIND ON
ZOOM SW
VIDEO IN/OUT
BACK UP VDD
SR VDD
SR VDW
EVF VDW
REG H
CAM C
CAM GND
CAM Y
FSC
VTR CS
VIDEO DACS
VTR UNREG
SYS RESET
UNREG GND
CC DOWN
CAM VD
MECHA CS
FLD
VTR SYNC
SYSTEM SYNC
DATA TO SLV
DATA TO MSTR
VTR SCK
DATA TO MK
DATA TO MOD
SCK MK
CS MK
INT VDD
RF SWP
EJECT
START/STOP
CAM+STBY R
CAM+STBY
LANC DC
LANC SIG
CAM ON
VTR ON
SS 4.9V
MT 5V
CAM 5V
-8.5V
D 4V
15V
D 5V
TG STBY 1 CW11
REG H CW10
CS SG CW1
CS TAI CW6
VTR SI CW2
VTR SO CW3
VTR SCK CW4
SYS RST CW5
PB V CW21
FSC CW18
CAM 5V CP1
-8.5V CP2
D4V CP4
15V CP3
D5V CP6
MT 5V CP5
CAM C CW20
CAM Y CW19
VTR SYNC CW12
FLD CW9
CAM VD CW8
CAM GND CG1
ZOOM SW CW13
FOCUS1 CW16
FOCUS2 CW17
CGH CW7
DDS VDD CW15
DDS VDW CW14
UNREG GND CG3
LANC DC CW22
LANC SIG CW23


12
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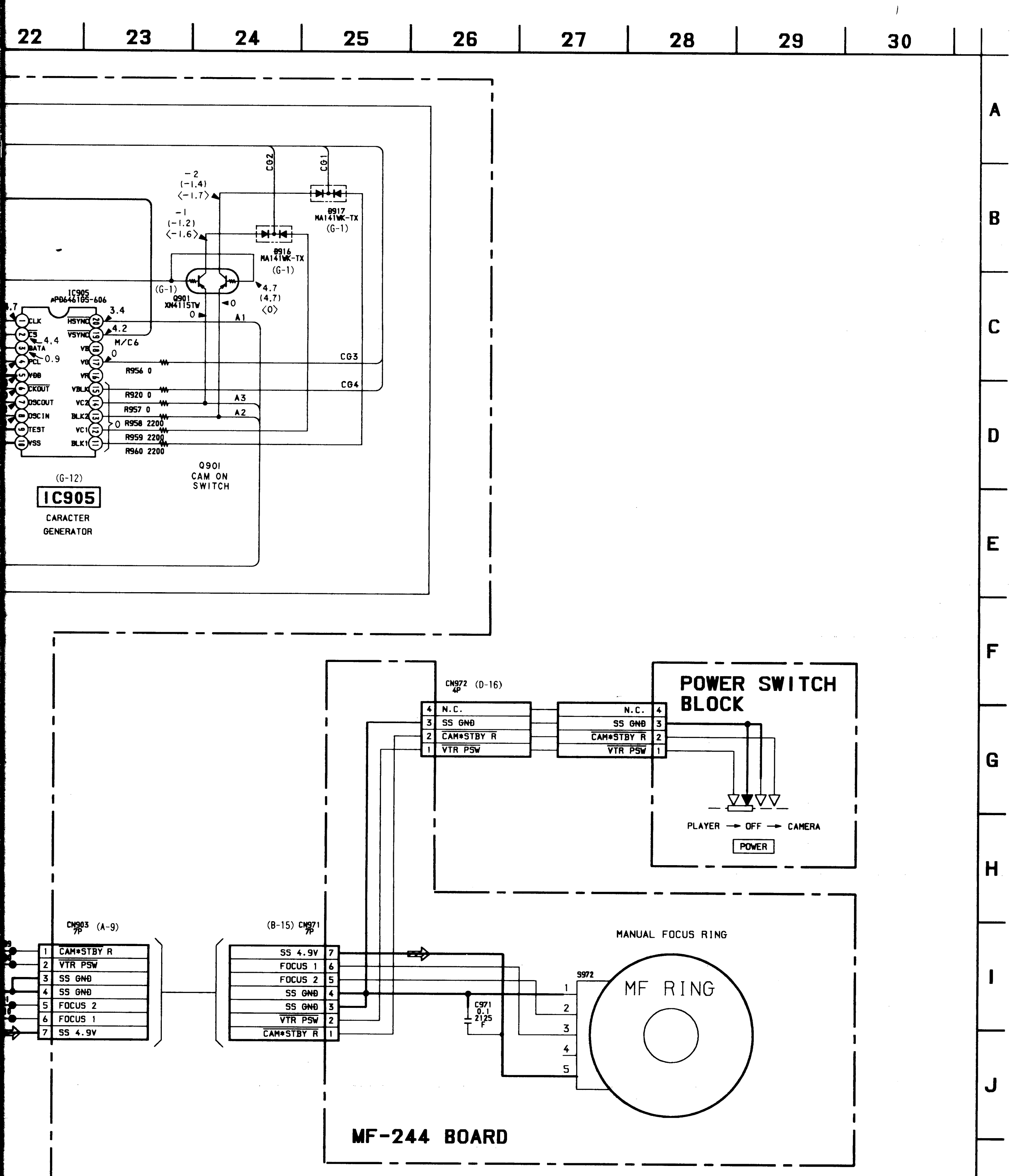
18
19
20
21
22
23
24
25
(E-4)
IC902
MODE CONTROLER 8L
(MASTER)
IC902
MB89098PFV-G
(G-12)
IC905
CARACTER
GENERATOR
IC905
AP0646105-606
Q901
CAM ON
SWITCH
Q901
XN4115TW
D916
MA141WK-TX
D917
MA141WK-TX
FL901
L905
47μH
C922
(F-4)
IC904
LANC I/O
IC904 TL1596CPW-ELM100 0
(F-4)
IC903
REG/DET
IC903
S-8420AF-T2
D901
MA728-TX
CN903 7P (A-9)
CAM+STBY R
VTR PSW
SS GND
SS GND
FOCUS 2
FOCUS 1
SS 4.9V
(B-15) CN971 7P
SS 4.9V
FOCUS 1
FOCUS 2
SS GND
SS GND
VTR PSW
CAM+STBY R
MF-24
MF3
MF2
MF1
JL989
JL990
JL911
JL910
19
DATA TO MASTER
CS MECHA
CS OSD
TEST MODE 0 (GND)
TEST MODE 1 (GND)
X0 (10MHZ)
X1 (10MHZ)
VSS
RESET
DATE SW
TIME SW
EJECT SW
VTR MODE SW
AUTO LOCK SW
START/STOP SW
CCDOWN SW
CAM+STBY SW
BATT IN
SYS SYNC
INT VD
LANC POWER ON
LI PRE END
EEPROM WE
RF SWP
WIND ON
TALLY LED
SYSTEM RESET
N.C
CLO (32KHZ)
CLI (32KHZ)
VCC
BUZ
LANC OUT
LANC IN
BRIGHT B
BRIGHT A
BATT SENCE
AVCC
K AD IN 5
K AD IN 4
K AD IN 3
K AD IN 2
K AD IN 1
K AD IN 0
AVSS
CAM DD ON
VTR DD ON
TO STBY1
MODECON SCK
DATA TO SLAVE
CLK 10M/32K
DATA TO MOD
DATA TO MK
SCK MK
STRCS IN
CS MK
N.C
CS EEPROM
CS SR
CS SG
VIDEO IN/OUT
STB DA
CS TAI
CAM/LINE
M/C13
M/C14
M/C9
M/C21
M/C7
M/C3
M/C17
M/C8
M/C5
M/C6
SEG0–SEG12
COM0–COM3
(EVERSV)
(SS5V)
(BATTIN)
(LIPREEND)
CG3
CG4
A1
A2
A3


22
23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
IC905
μPD6461GS-606
CLK
CS
DATA
PCL
VDD
CKOUT
OSCOUT
OSCIN
TEST
VSS
HSYNC
VSYNC
VB
VG
VR
VBLK
VC2
BLK2
VC1
BLK1
3.4
4.2
4.4
0.9
M/C6
R956 0
R920 0
R957 0
R958 2200
R959 2200
R960 2200
(G-12)
IC905
CARACTER GENERATOR
Q901
XN4115TV
(G-1)
Q901
CAM ON SWITCH
-2
(-1.4)
〈-1.7〉
-1
(-1.2)
〈-1.6〉
4.7
(4.7)
〈0〉
D916
MA141WK-TX
(G-1)
D917
MA141WK-TX
(G-1)
CG1
CG2
CG3
CG4
A1
A2
A3
CN972 4P (D-16)
N.C.
SS GND
CAM•STBY R
VTR PSW
POWER SWITCH BLOCK
PLAYER → OFF → CAMERA
POWER
CN903 7P (A-9)
CAM•STBY R
VTR PSW
SS GND
SS GND
FOCUS 2
FOCUS 1
SS 4.9V
(B-15) CN971 7P
SS 4.9V
FOCUS 1
FOCUS 2
SS GND
SS GND
VTR PSW
CAM•STBY R
C971 0.1 2125 F
S972
MANUAL FOCUS RING
MF RING
MF-244 BOARD

L

M

N

O

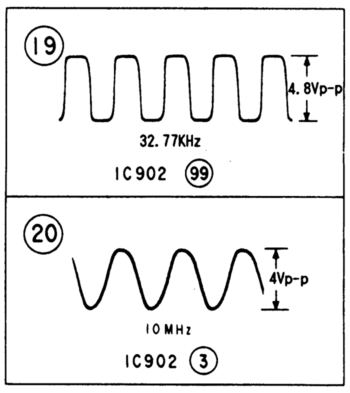
P

Q

R

http://www.manualscenter.com

VC-132 BOARD


19
4.8Vp-p
32.77KHz
IC902 99
20
4Vp-p
10MHz
IC902 3

- **SIGNAL PATH**

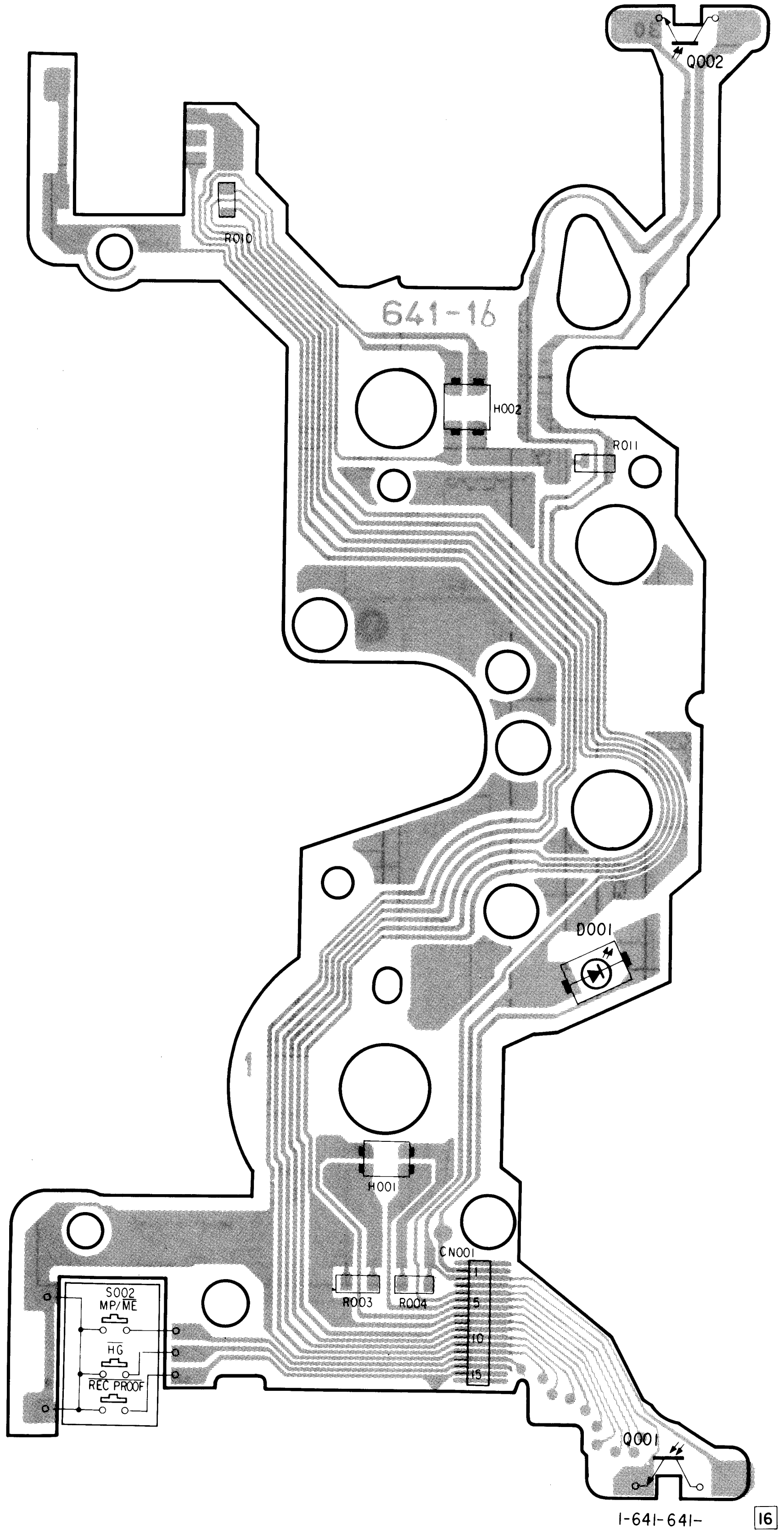
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		
PB				

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

LS-33 (MECHA SENSOR), SL-37 (FG/PG WAVEFORM SHAPING) PRINTED WIRING BOARD/SCHEMATIC DIAGRAM

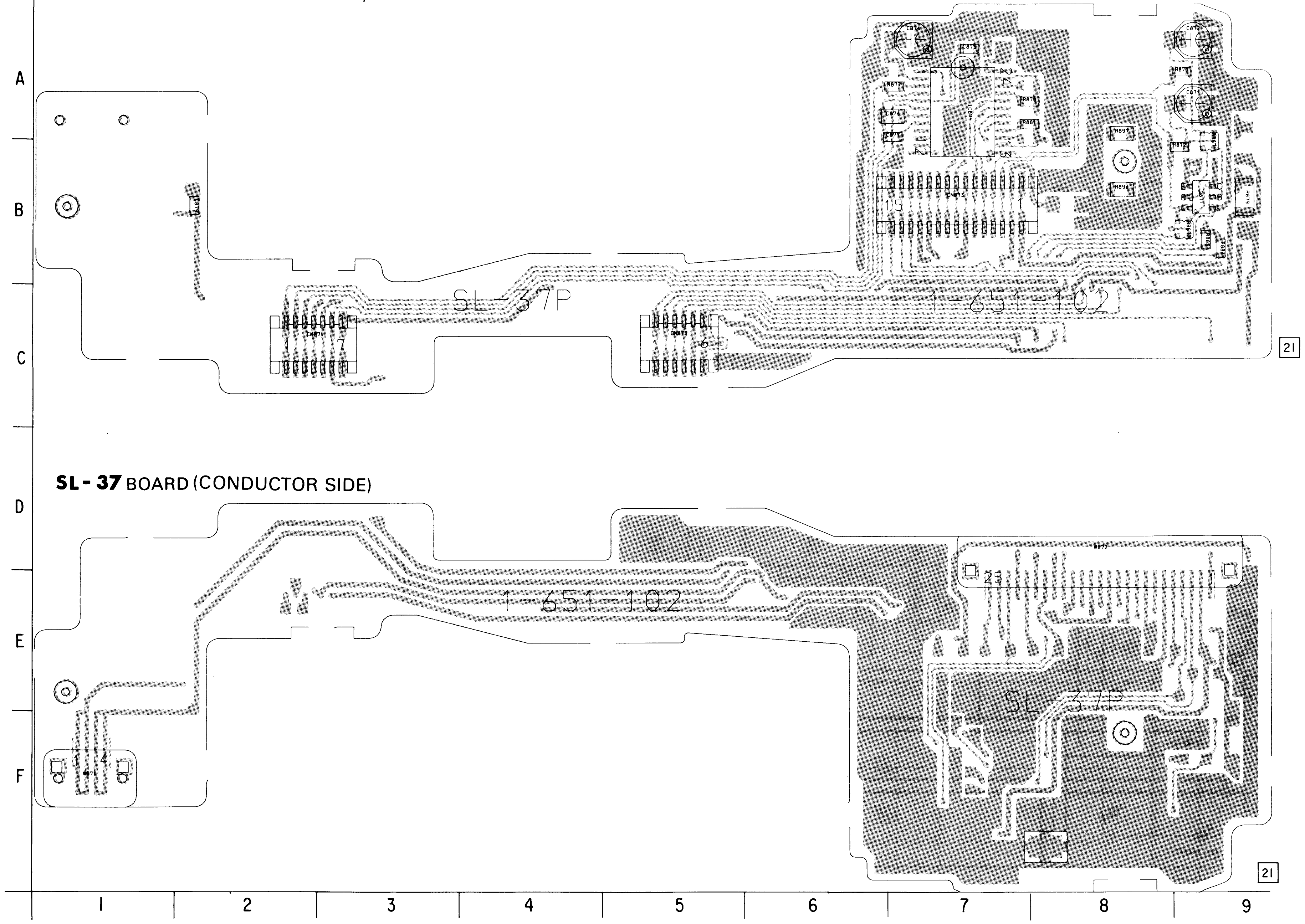
– Ref. No. LS-33 BOARD: 10,000 Series, SL-37 BOARD: 11,000 Series –

LS-33 BOARD

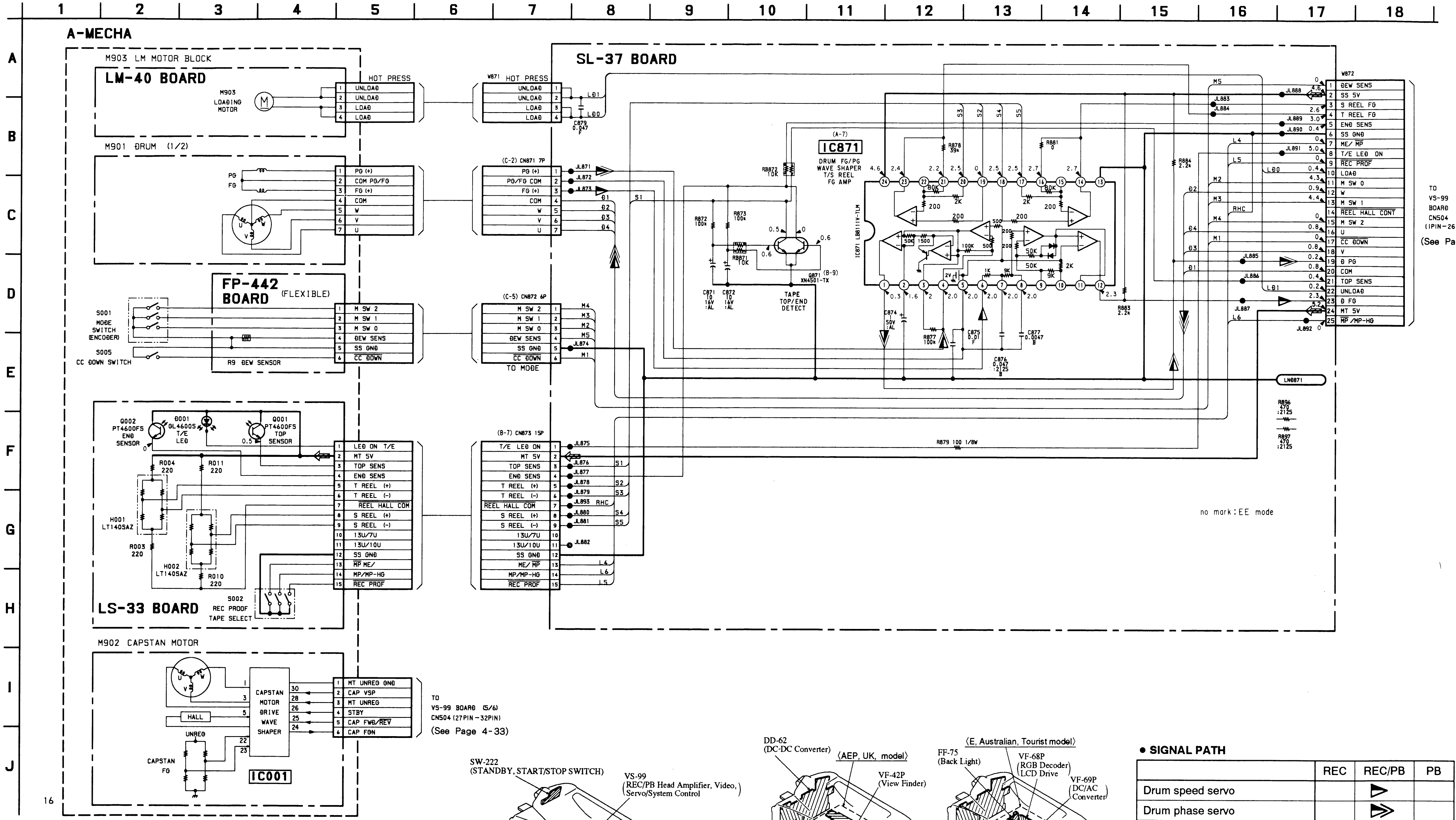

Q002
R010
641-16
H002
R011
D001
H001
CN001
1
5
10
15
S002
MP/ME
HG
REC PROOF
R003
R004
Q001
1-641-641-
16

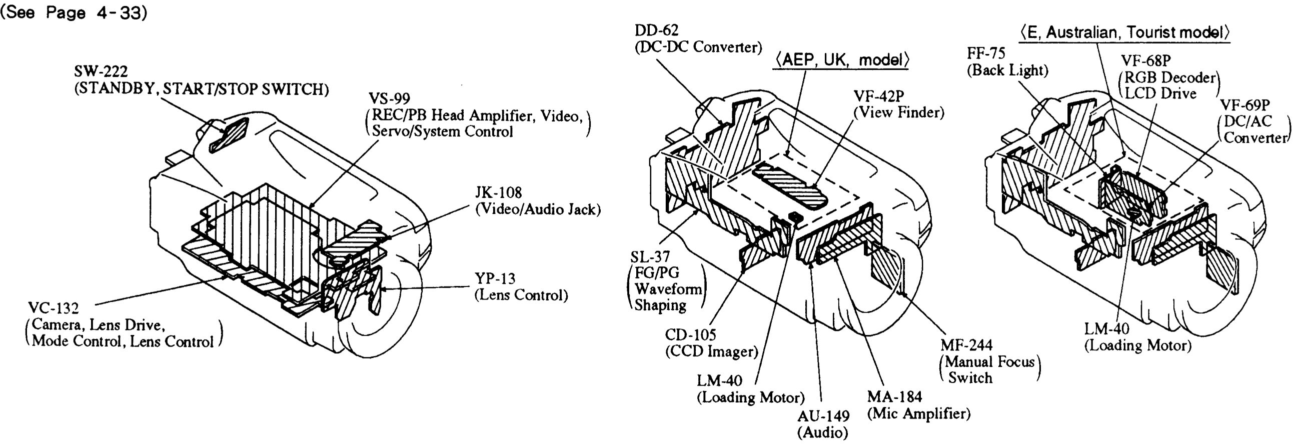
SL - 37 BOARD (COMPONENT SIDE)

SL - 37 BOARD (CONDUCTOR SIDE)


A
B
C
D
E
F
1
2
3
4
5
6
7
8
9
SL-37P
1-651-102
CN871
CN872
24
15
1
7
6
21
25
1
4
SL-37P
1-651-102
21

- LM-40, FP-442 boards are replaced as blocks, so that there PRINTED WIRING BOARD are omitted.

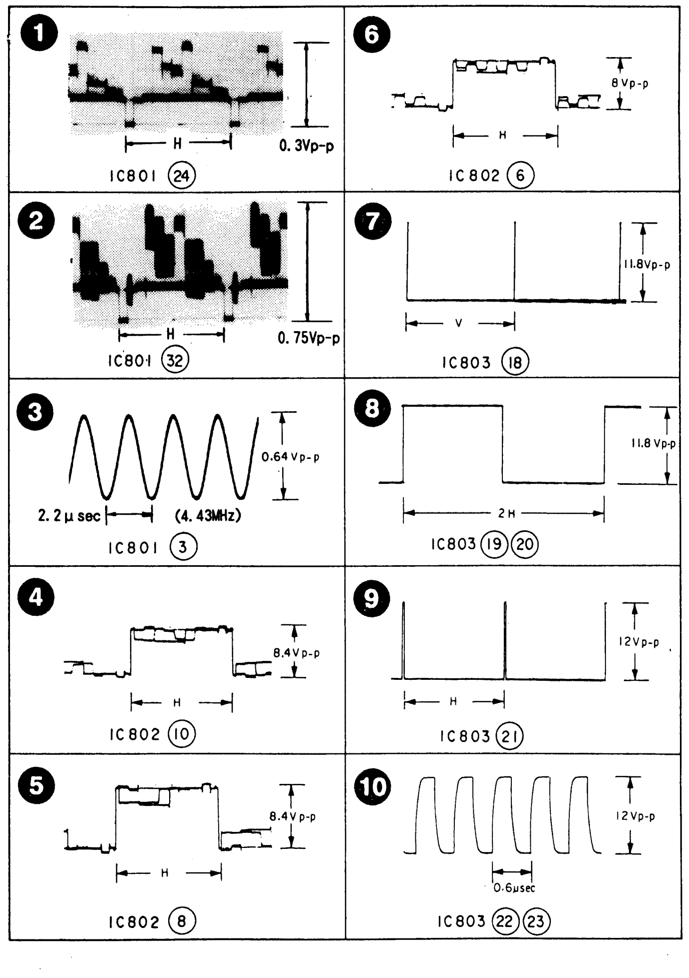

A-MECHA
M903 LM MOTOR BLOCK
LM-40 BOARD
M903 LOADING MOTOR
HOT PRESS
UNLOAD
LOAD
M901 DRUM (1/2)
PG (+)
COM PG/FG
FG (+)
COM
W
V
U
FP-442 BOARD (FLEXIBLE)
S001 MODE SWITCH (ENCODER)
S005 CC DOWN SWITCH
R9 DEW SENSOR
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
Q002 PT4600FS END SENSOR
D001 GL4600S T/E LED
Q001 PT4600FS TOP SENSOR
H001 LT1405AZ
H002 LT1405AZ
LS-33 BOARD
S002 REC PROOF TAPE SELECT
LED ON T/E
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL COM
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
MP ME/
MP/MP-HG
REC PROF
M902 CAPSTAN MOTOR
HALL
CAPSTAN FG
CAPSTAN MOTOR DRIVE WAVE SHAPER
IC001
MT UNREG GND
CAP VSP
MT UNREG
STBY
CAP FWD/REV
CAP FGN
TO VS-99 BOARD (5/6) CN504 (27PIN-32PIN)
(See Page 4-33)
SL-37 BOARD
W871 HOT PRESS
(C-2) CN871 7P
(C-5) CN872 6P
TO MODE
(B-7) CN873 15P
IC871
DRUM FG/PG WAVE SHAPER T/S REEL FG AMP
Q871 XN4501-TX
TAPE TOP/END DETECT
W872
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
ME/ MP
T/E LED ON
REC PROF
LOAD
M SW 0
W
M SW 1
REEL HALL CONT
M SW 2
U
CC DOWN
V
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
MP /MP-HG
TO VS-99 BOARD CN504 (1PIN-26PIN)
(See Page 4-33)
LN0871
no mark : EE mode
16


SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)
DD-62
(DC-DC Converter)
〈AEP, UK, model〉
VF-42P
(View Finder)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)
〈E, Australian, Tourist model〉
FF-75
(Back Light)
VF-68P
(RGB Decoder LCD Drive)
VF-69P
(DC/AC Converter)
LM-40
(Loading Motor)

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

VF-68P BOARD

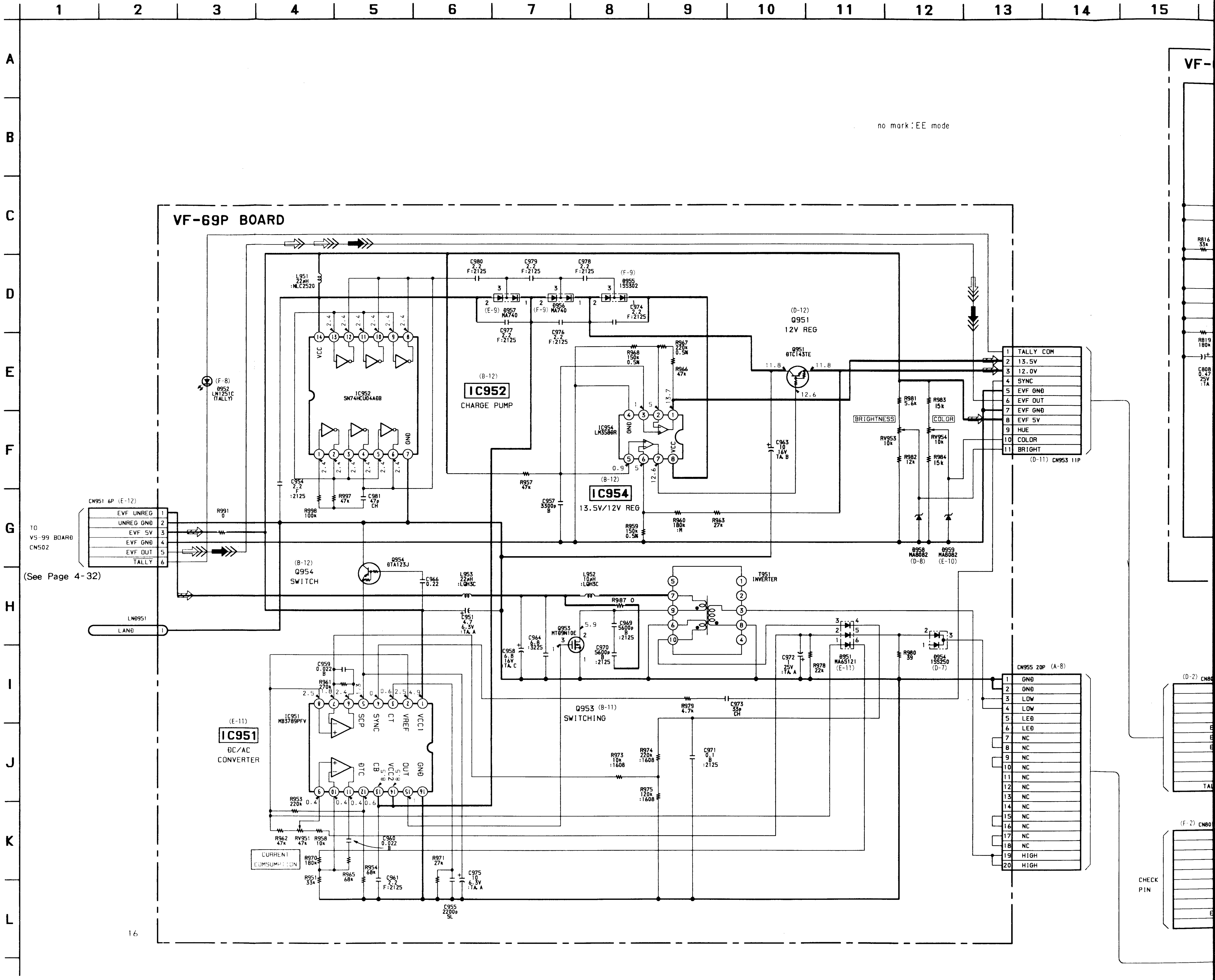


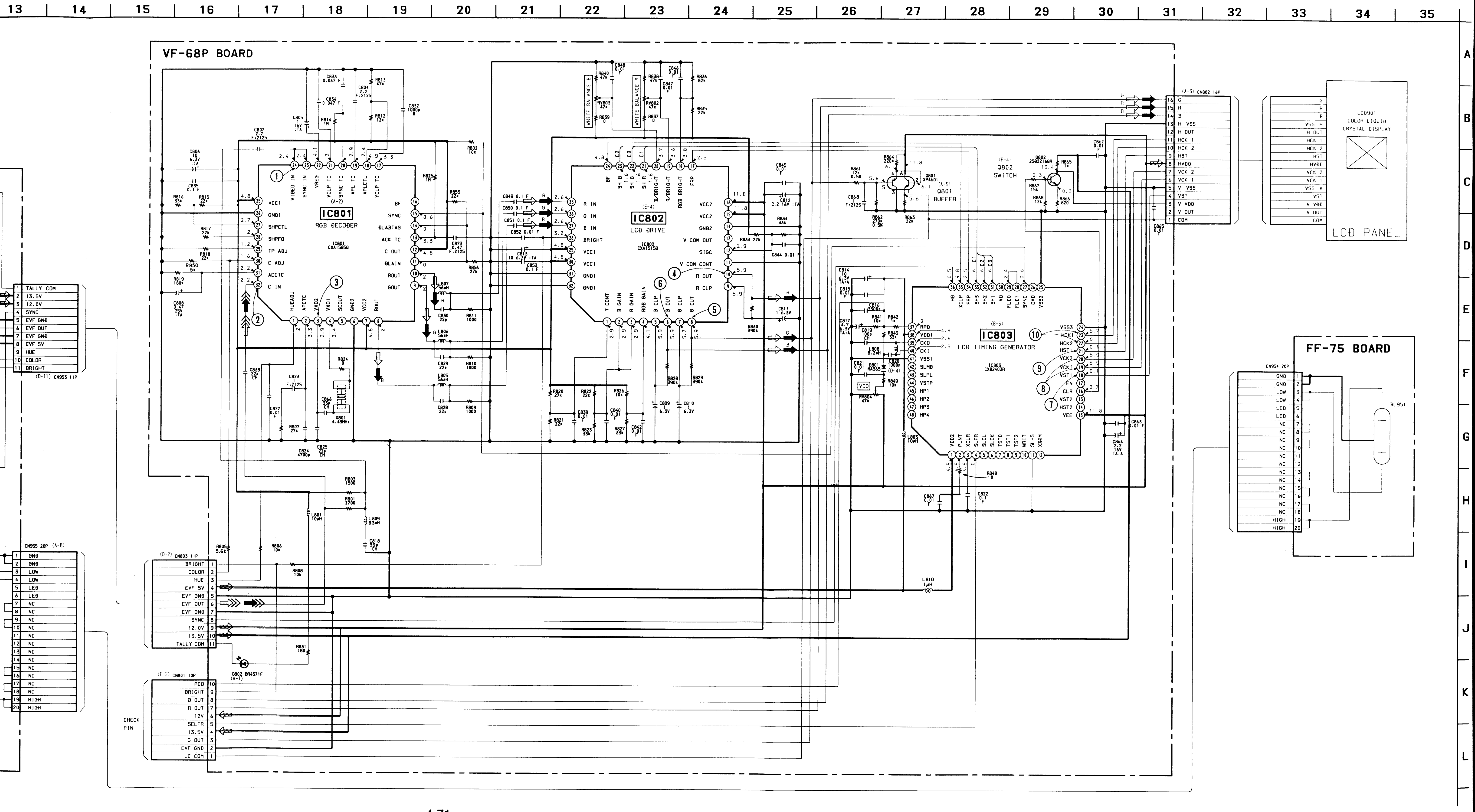
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡		➡》	
PB	⇨		⇨》	

(E, Australian, Tourist model)
VF-69P (DC/AC converter), VF-68P (RGB DECORDER, LCD DRIVE), FF-75 (BACK LIGHT) SCHEMATIC DIAGRAM

– Ref. No. VF-69P BOARD: 12,000 Series, VF-68P BOARD: 13,000 Series, FF-75 BOARD: 14,000 Series –


VF-69P BOARD
no mark : EE mode
IC952
SN74HCU04AGB
IC952
CHARGE PUMP
IC954
13.5V/12V REG
IC954
LM358OR
Q951
12V REG
Q954
SWITCH
IC951
DC/AC
CONVERTER
IC951
MB3789PFV
Q953
SWITCHING
T951
INVERTER
BRIGHTNESS
COLOR
CN951 6P
TO
VS-99 BOARD
CN502
(See Page 4-32)
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
LN0951
LAND
CN953 11P
TALLY COM
13.5V
12.0V
SYNC
EVF GND
EVF OUT
EVF GND
EVF 5V
HUE
COLOR
BRIGHT
CN955 20P
GND
GND
LOW
LOW
LEO
LEO
NC
HIGH
HIGH
CURRENT
CONSUMPTION
CHECK
PIN
VF-

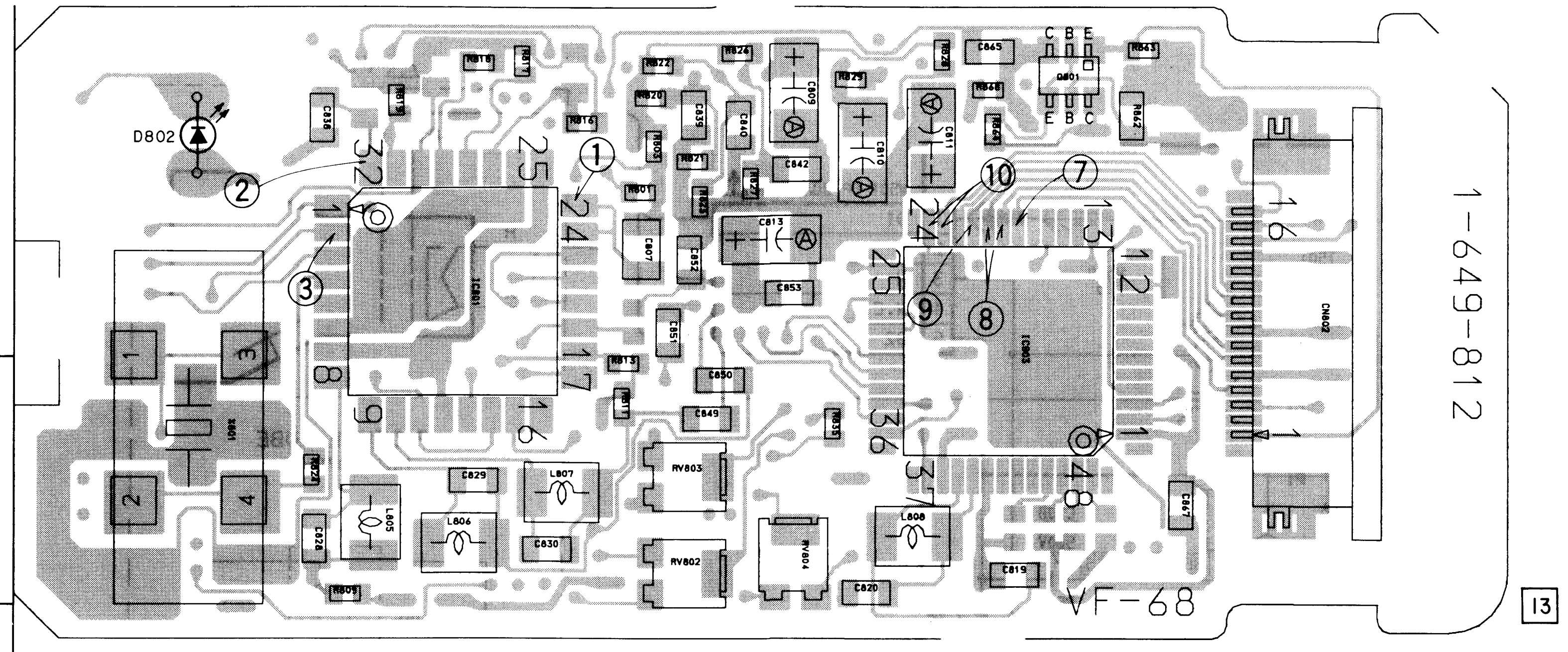
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
A
B
C
D
E
F
G
H
I
J
K
L
VF-68P BOARD
IC801
RGB DECODER
IC801 CXA1585Q
IC802
LCD DRIVE
IC802 CXA1515Q
IC803
LCD TIMING GENERATOR
IC803 CXD2403R
Q801 XP4601
Q801 BUFFER
Q802 2SD2216QR
Q802 SWITCH
WHITE BALANCE B
WHITE BALANCE R
VCO
LCD901
COLOR LIQUID CRYSTAL DISPLAY
LCD PANEL
FF-75 BOARD
BL951
CN802 16P
CN803 11P
CN801 10P
CN953 11P
CN954 20P
CN955 20P
D802 BR4371F
X801 4.43MHz
L810 1μH
CHECK PIN
TALLY COM
13.5V
12.0V
SYNC
EVF GND
EVF OUT
EVF 5V
HUE
COLOR
BRIGHT
PCO
B OUT
R OUT
12V
SELFR
G OUT
LC COM
GND
LOW
LED
NC
HIGH
G
R
B
H VSS
H OUT
HCK 1
HCK 2
HST
HVDD
VCK 2
VCK 1
V VSS
VST
V VDD
V OUT
COM

(E, Australian, Tourist model)

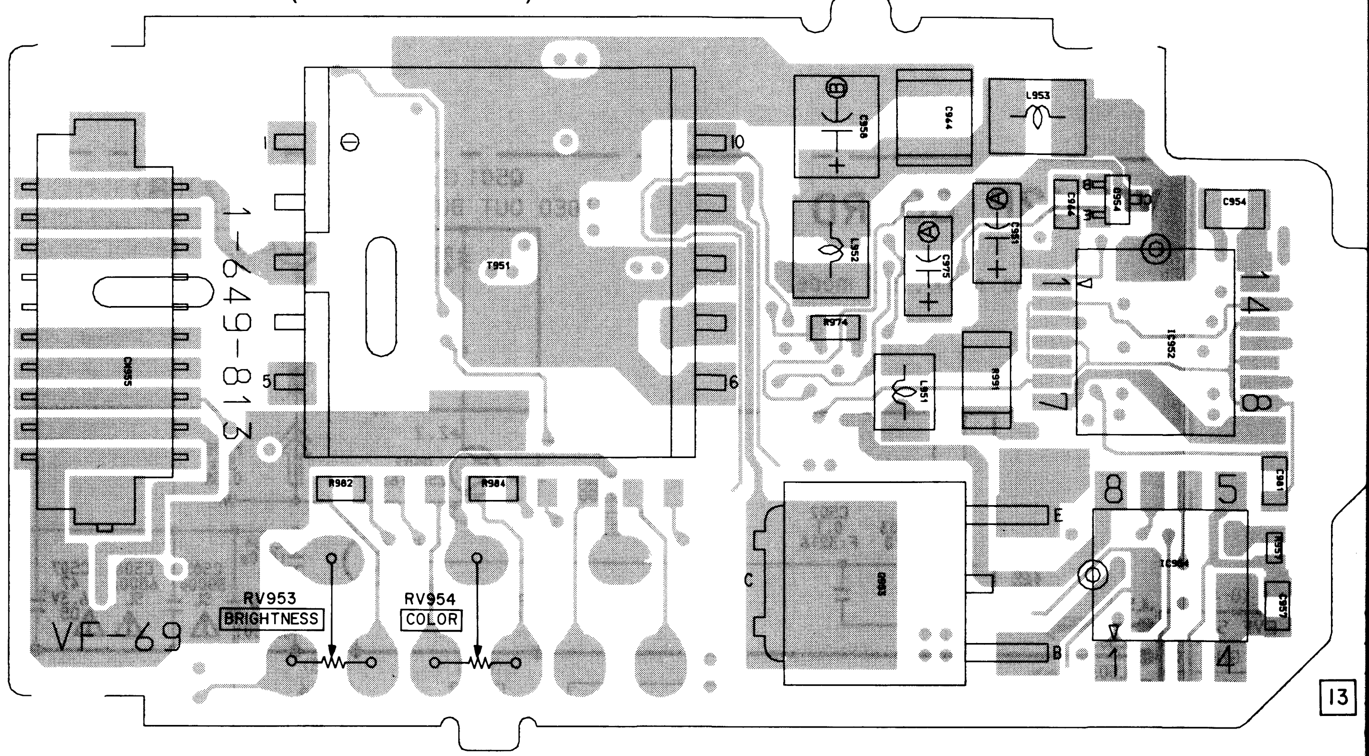
VF-69P (DC/AC converter), VF-68P (RGB DECORDER, LCD DRIVE), FF-75 (BACK LIGHT) PRINTED WIRING BOARD

– Ref. No. VF-69P BOARD: 12,000 Series, VF-68P BOARD: 13,000 Series, FF-75 BOARD: 14,000 Series –

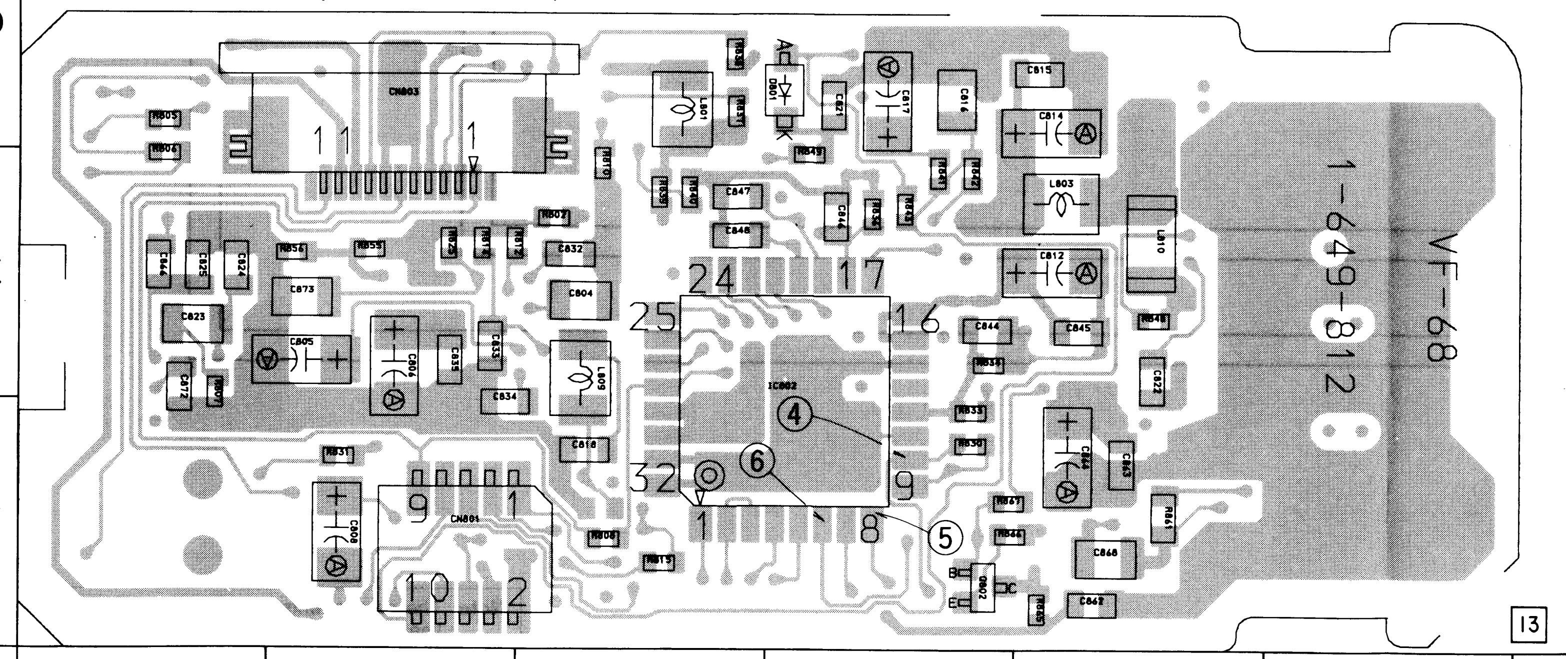
VF-68P BOARD (COMPONENT SIDE)


D802
IC801
IC803
CN802
RV803
RV802
RV804
1-649-812
VF-68
13

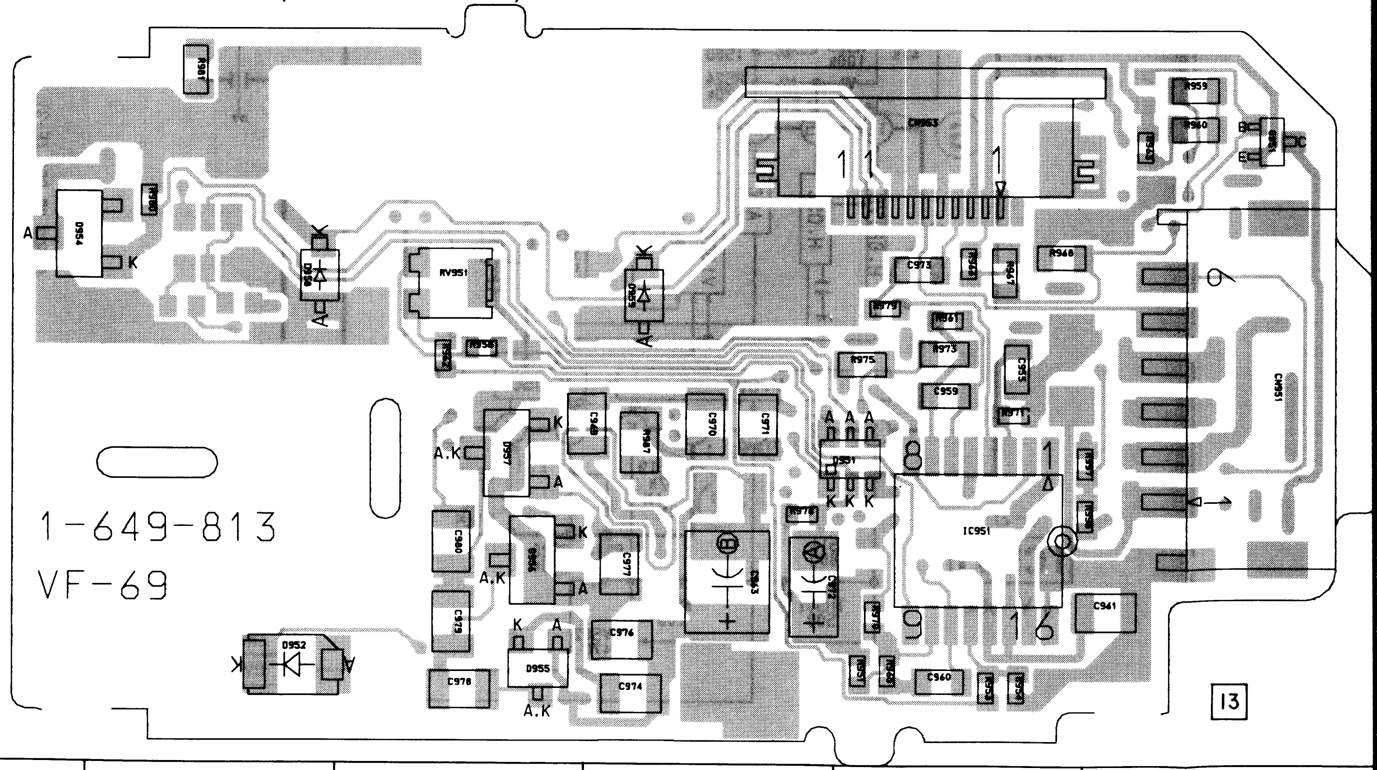
VF-69P BOARD (COMPONENT SIDE)


1-649-813
T951
CN955
IC952
IC954
RV953
BRIGHTNESS
RV954
COLOR
VF-69
13

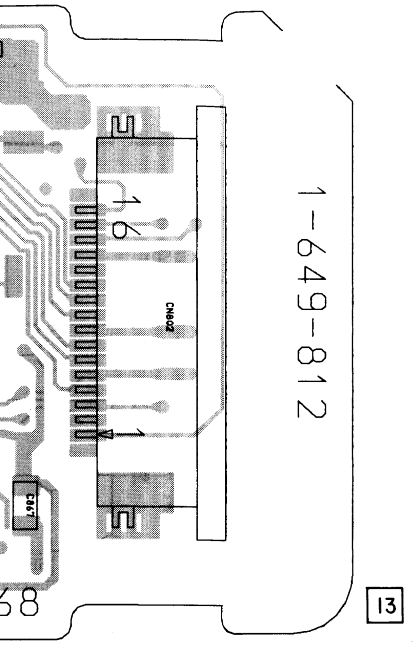
VF-68P BOARD (CONDUCTOR SIDE)


CN803
IC802
CN801
1-649-812
VF-68
13

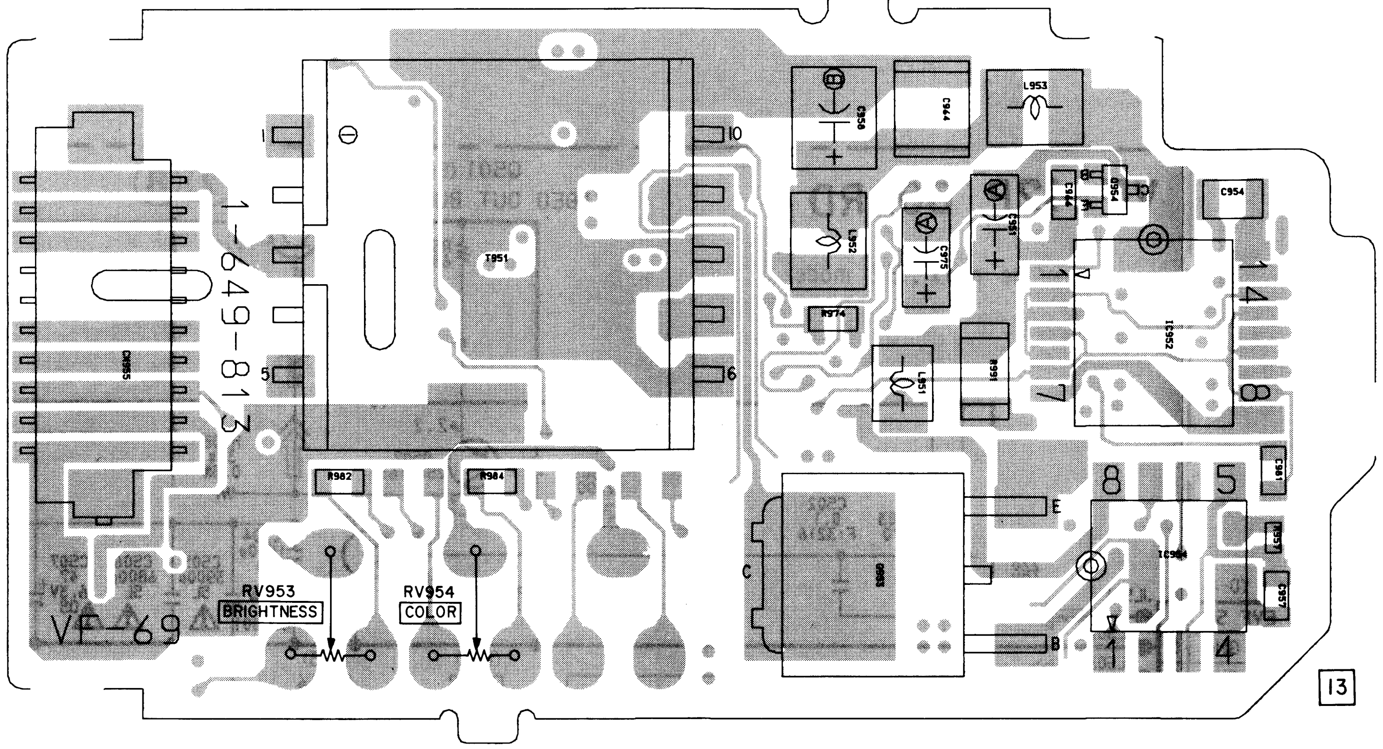
VF-69P BOARD (CONDUCTOR SIDE)


CN953
CN951
IC951
RV951
1-649-813
VF-69
13

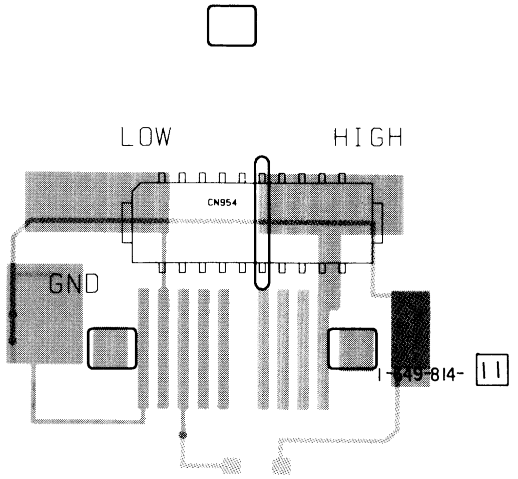
INTED WIRING BOARD


1-649-812
CN802
16
1
13

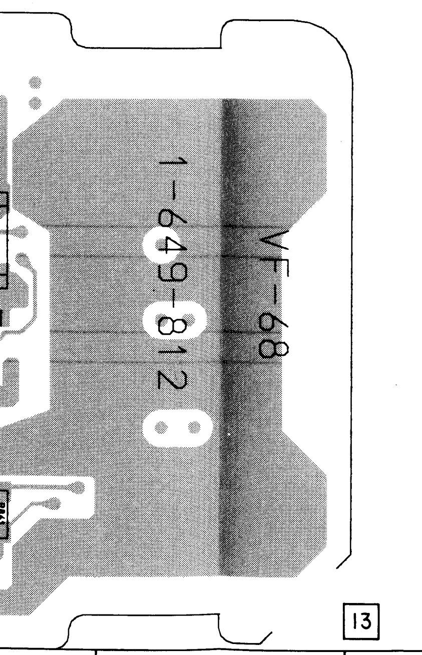
VF-69P BOARD (COMPONENT SIDE)

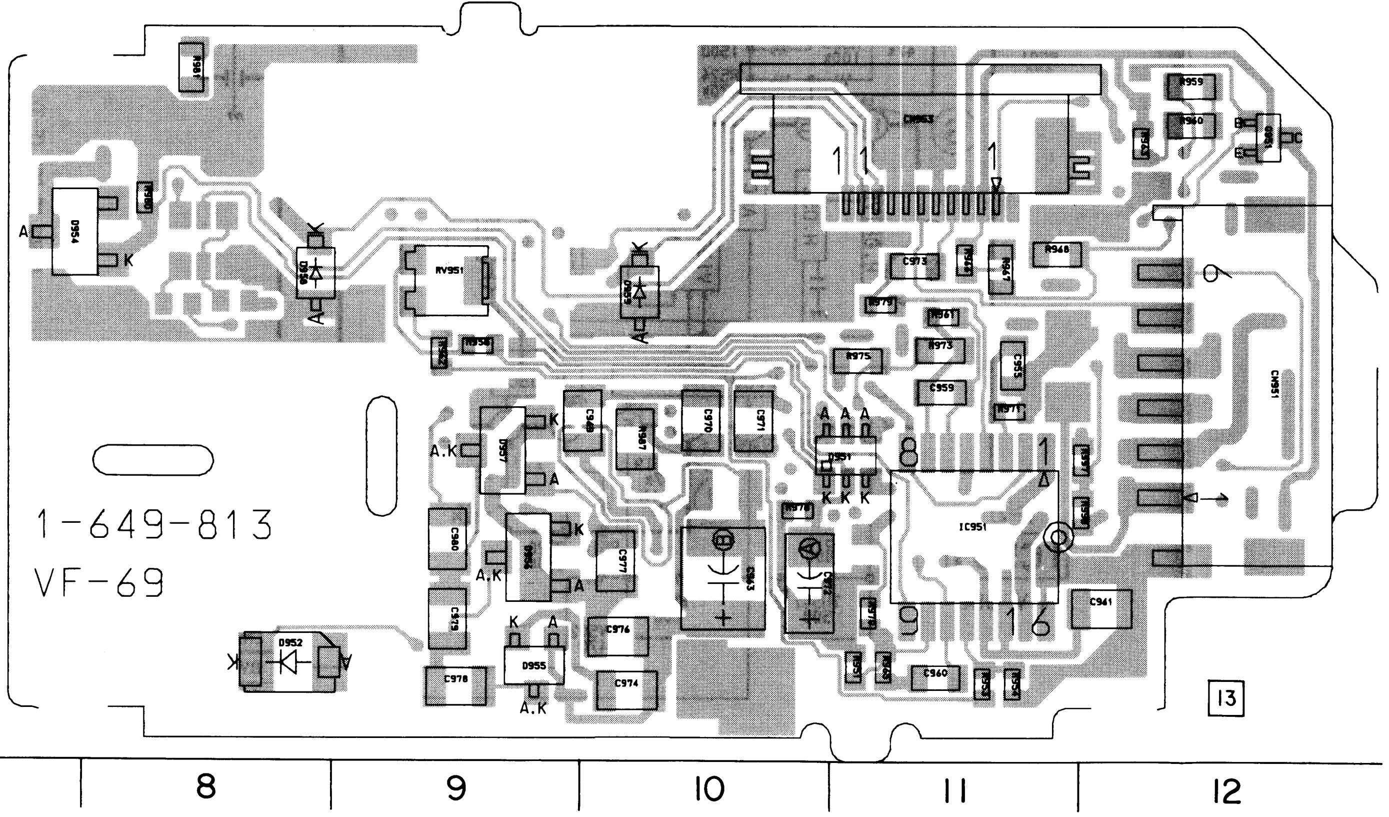

1-649-813
CN955
T951
1
5
10
6
C958
C944
L953
L952
C975
C953
C954
IC952
R974
L951
R958
14
7
8
R982
R984
RV953
BRIGHTNESS
RV954
COLOR
VF-69
Q953
E
C
B
IC954
8
5
1
4
13

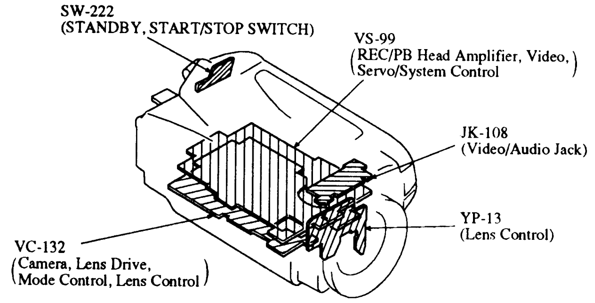
FF-75 BOARD (COMPONENT SIDE)

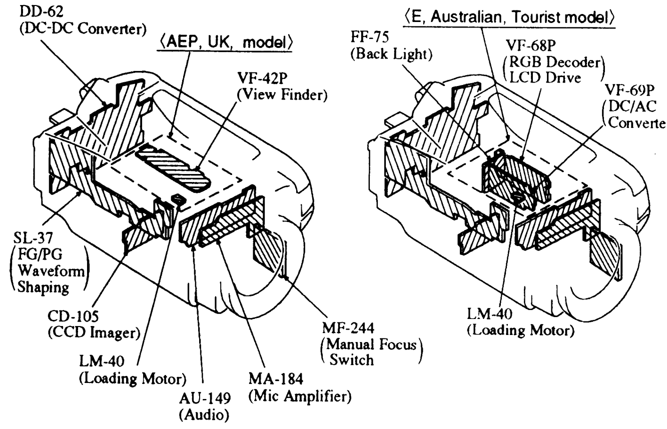

LOW
HIGH
CN954
GND
1-649-814-
11

VF-69P BOARD (CONDUCTOR SIDE)


1-649-812
VF-68
13


CN953
11
1
D954
A
K
D958
RV951
D959
C973
R948
IC951
CN951
D957
D956
D951
A.K
C960
C979
C978
D952
D955
C976
C974
C977
C983
C972
C941
C959
C960
8
1
9
16
1-649-813
VF-69
13
6
7
8
9
10
11
12


SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)

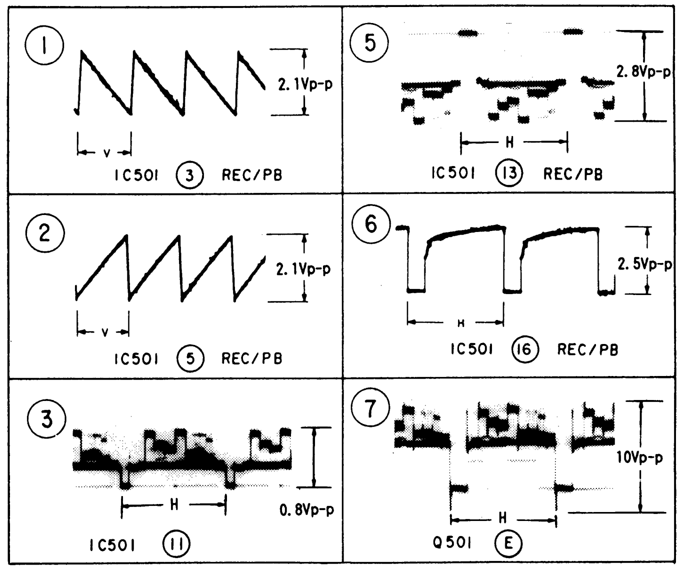

DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder)
LCD Drive
VF-69P
(DC/AC Converter)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)
LM-40
(Loading Motor)

(AEP, UK model)

VF-42P (VIEW FINDER) SCHEMATIC DIAGRAM

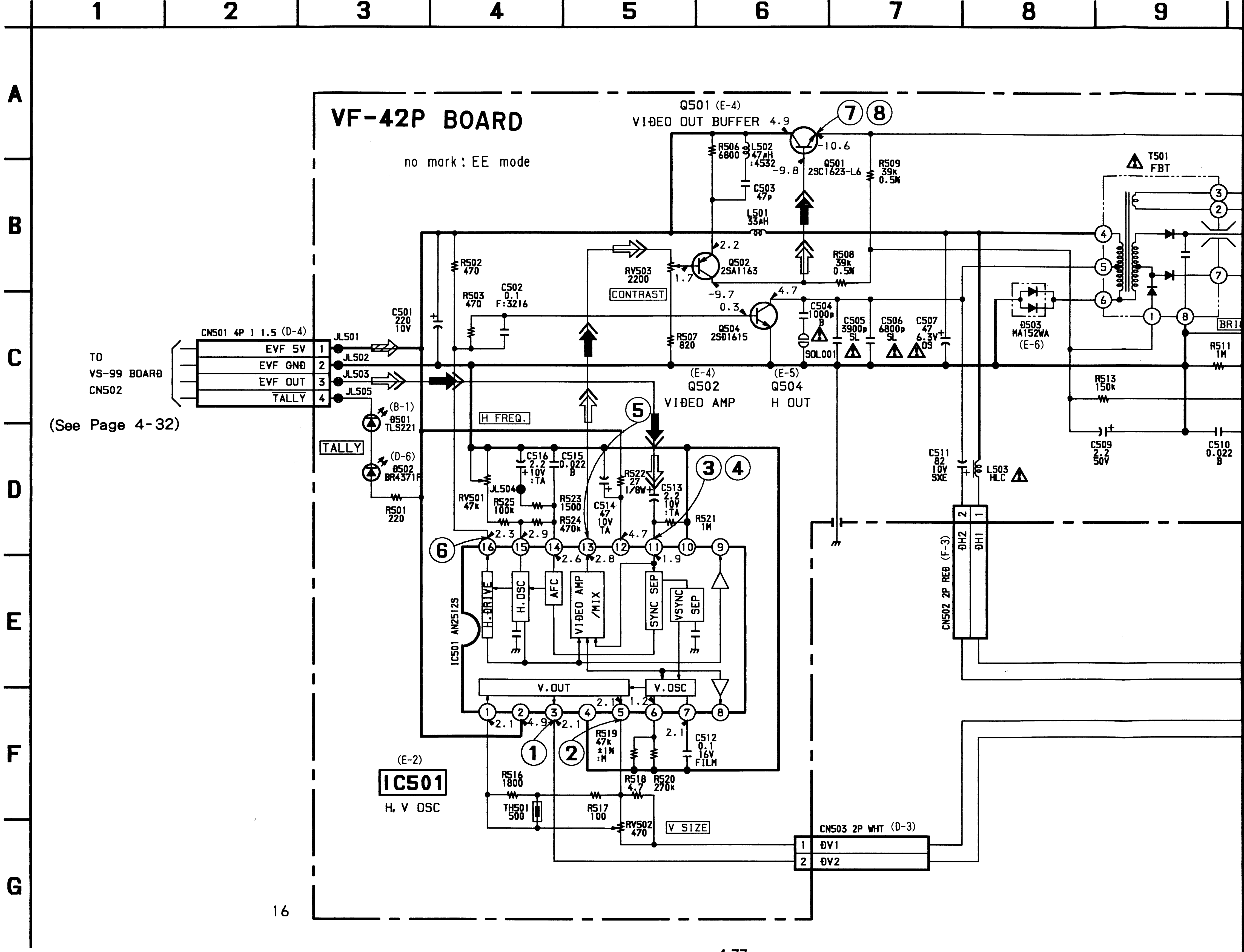
– Ref. No. VF-42P BOARD: 15,000 Series –

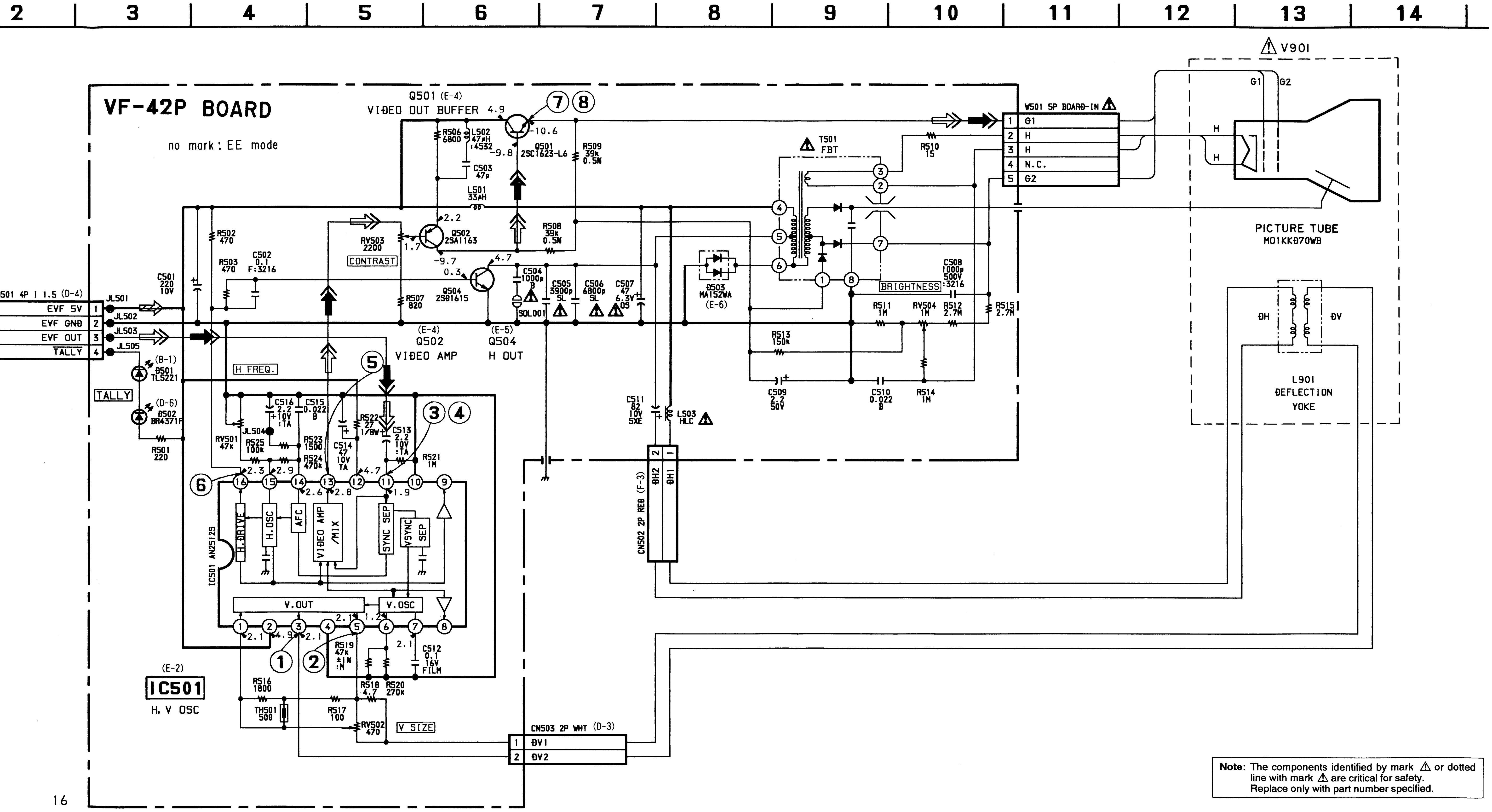
VF-42P BOARD



- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC		➡		
PB		⇨		


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
VF-42P BOARD
no mark : EE mode
Q501 (E-4)
VIDEO OUT BUFFER
Q501 2SC1623-L6
R506 6800
L502 47μH :4532
C503 47p
L501 33μH
R509 39k 0.5W
R508 39k 0.5W
RV503 2200
CONTRAST
Q502 2SA1163
Q504 2SD1615
R502 470
R503 470
C502 0.1 F:3216
C501 220 10V
R507 820
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
(E-4) Q502 VIDEO AMP
(E-5) Q504 H OUT
T501 FBT
D503 MA152WA (E-6)
R511 1M
R513 150k
C509 2.2 50V
C510 0.022 B
C511 82 10V SXE
L503 HLC
BRI
CN501 4P I 1.5 (D-4)
EVF 5V
EVF GND
EVF OUT
TALLY
JL501
JL502
JL503
JL505
TO VS-99 BOARD CN502
(See Page 4-32)
(B-1) D501 TLS221
(D-6) D502 BR4371F
TALLY
R501 220
H FREQ.
RV501 47k
JL504
C516 2.2 10V :TA
C515 0.022 B
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R522 27 1/8W
C513 2.2 10V :TA
R521 1M
IC501 AN2512S
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
R519 47k ±1% :M
C512 0.1 16V FILM
R516 1800
TH501 500
R517 100
R518 4.7
R520 270k
RV502 470
V SIZE
(E-2) IC501 H, V OSC
CN502 2P REB (F-3)
DH2
DH1
CN503 2P WHT (D-3)
DV1
DV2
16

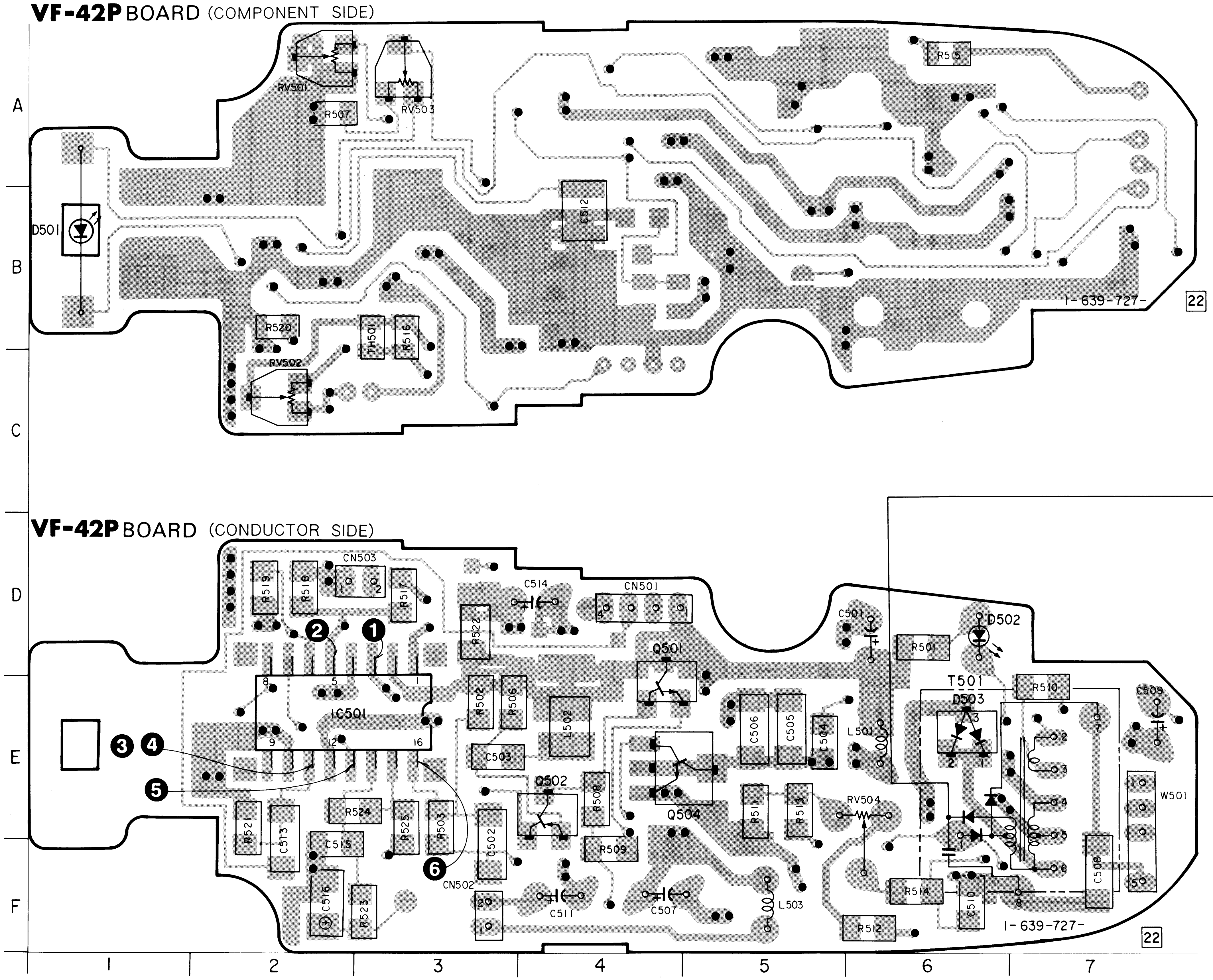

2
3
4
5
6
7
8
9
10
11
12
13
14
VF-42P BOARD
no mark : EE mode
Q501 (E-4)
VIDEO OUT BUFFER 4.9
⑦⑧
R506 6800
L502 47µH :4532
-10.6
-9.8
Q501 2SC1623-L6
R509 39k 0.5W
C503 47p
L501 33µH
2.2
Q502 2SA1163
R508 39k 0.5W
RV503 2200
CONTRAST
1.7
-9.7
0.3
4.7
Q504 2SD1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
R502 470
R503 470
C502 0.1 F:3216
C501 220 10V
R507 820
(E-4) Q502 VIDEO AMP
(E-5) Q504 H OUT
501 4P I 1.5 (D-4)
EVF 5V 1
EVF GND 2
EVF OUT 3
TALLY 4
JL501
JL502
JL503
JL505
(B-1) D501 TLS221
(D-6) D502 BR4371F
TALLY
R501 220
H FREQ.
⑤
C516 2.2 10V :TA
C515 0.022 B
R522 27 1/8W
C513 2.2 10V :TA
③④
JL504
RV501 47k
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R521 1M
⑥
2.3
2.9
2.6
2.8
4.7
1.9
16 15 14 13 12 11 10 9
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
IC501 AN2512S
V.OUT
V.OSC
1 2 3 4 5 6 7 8
2.1
4.9
2.1
2.1
1.2
2.1
①
②
R519 47k ±1% :M
C512 0.1 16V FILM
R518 4.7
R520 270k
R516 1800
TH501 500
R517 100
RV502 470
V SIZE
(E-2)
IC501
H, V OSC
CN503 2P WHT (D-3)
1 DV1
2 DV2
D503 MA152WA (E-6)
T501 FBT
R510 15
BRIGHTNESS
C508 1000p 500V :3216
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
C511 82 10V SXE
L503 HLC
CN502 2P RED (F-3)
DH2 DH1
W501 5P BOARD-IN
1 G1
2 H
3 H
4 N.C.
5 G2
V901
G1 G2
H
H
PICTURE TUBE
M01KKD70WB
DH
DV
L901
DEFLECTION
YOKE
16

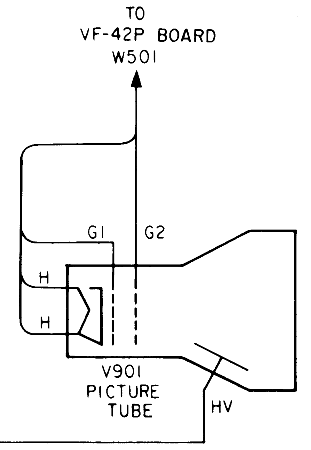
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

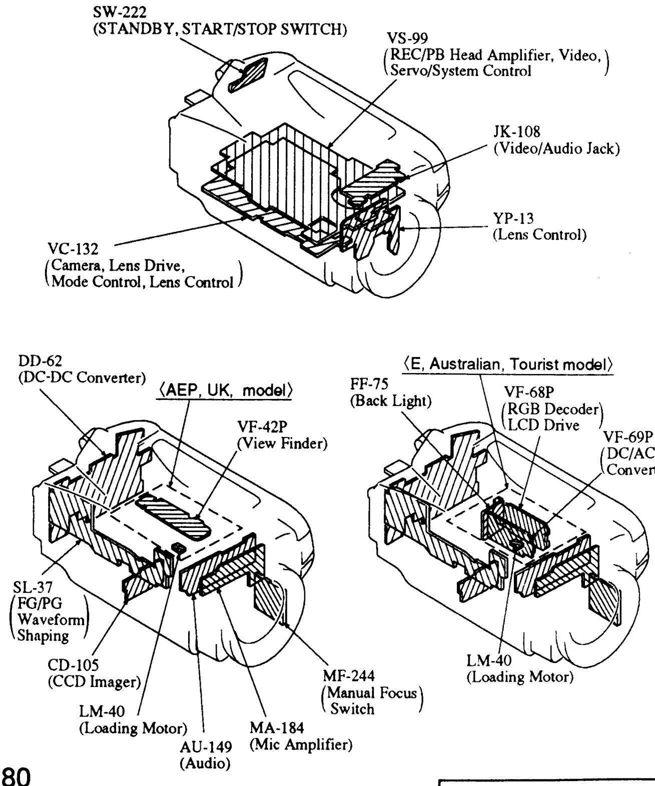
(AEP, UK model)

VF-42P (VIEW FINDER) PRINTED WIRING BOARD

– Ref. No. VF-42P BOARD: 15,000 Series –

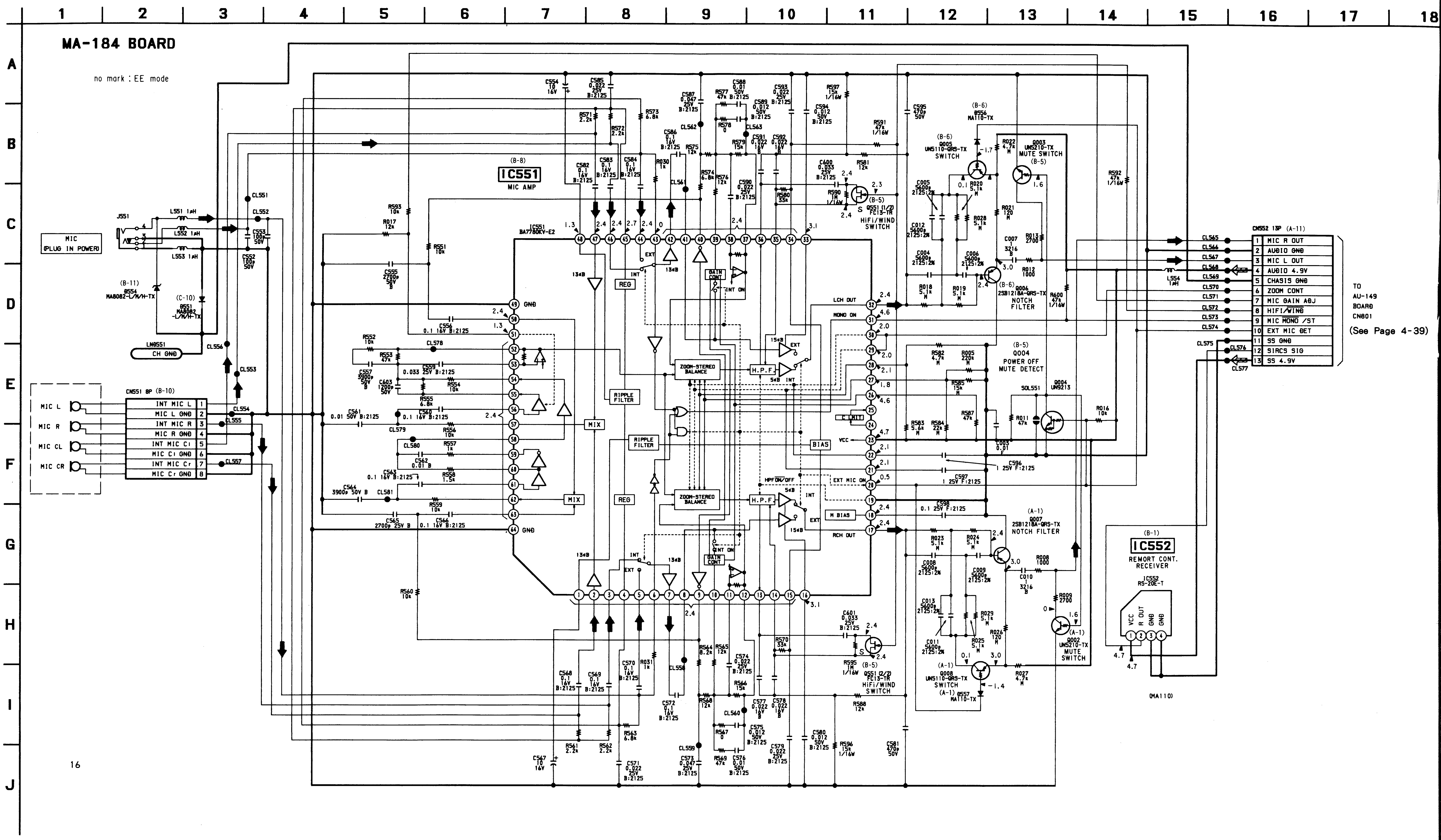

VF-42P BOARD (COMPONENT SIDE)
RV501
R507
RV503
R515
D501
C512
R520
RV502
TH501
R516
1-639-727-
22
VF-42P BOARD (CONDUCTOR SIDE)
CN503
R519
R518
R517
C514
CN501
C501
D502
R522
Q501
R501
IC501
T501
D503
R510
C509
R502
R506
L502
C506
C505
C504
L501
C503
Q502
R508
Q504
R511
R513
RV504
W501
R521
C513
C515
R524
R525
R503
C502
R509
C508
C516
R523
CN502
C511
C507
L503
R514
C510
R512
1-639-727-
22
A
B
C
D
E
F
1
2
3
4
5
6
7


TO
VF-42P BOARD
W501
G1
G2
H
H
V901
PICTURE
TUBE
HV


SW-222
(STANDBY, START/STOP SWITCH)
VS-99
(REC/PB Head Amplifier, Video, Servo/System Control)
JK-108
(Video/Audio Jack)
YP-13
(Lens Control)
VC-132
(Camera, Lens Drive, Mode Control, Lens Control)
DD-62
(DC-DC Converter)
⟨AEP, UK, model⟩
VF-42P
(View Finder)
SL-37
(FG/PG Waveform Shaping)
CD-105
(CCD Imager)
LM-40
(Loading Motor)
AU-149
(Audio)
MA-184
(Mic Amplifier)
MF-244
(Manual Focus Switch)
⟨E, Australian, Tourist model⟩
FF-75
(Back Light)
VF-68P
(RGB Decoder, LCD Drive)
VF-69P
(DC/AC Converter)
LM-40
(Loading Motor)

MA-184 (MIC AMPLIFIER) SCHEMATIC DIAGRAM

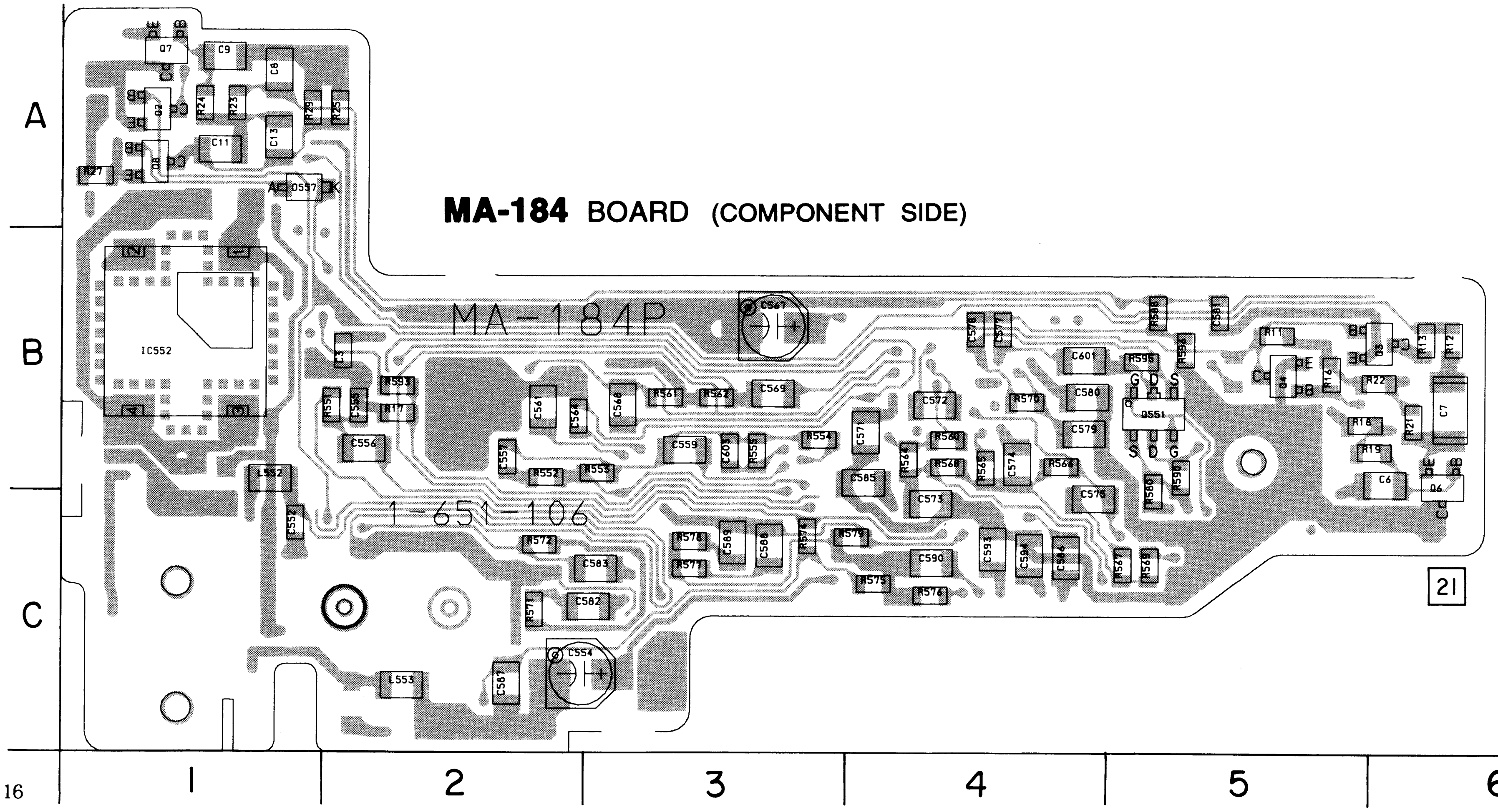
– Ref. No. MA-184 BOARD: 16,000 Series –


MA-184 BOARD
no mark : EE mode
IC551 MIC AMP
IC551 BA7780KV-E2
IC552 REMORT CONT. RECEIVER
IC552 RS-20E-T
VCC R OUT GND GND
J551
MIC (PLUG IN POWER)
L551 1μH
L552 1μH
L553 1μH
LND551 CH GND
CN551 8P (B-10)
1 INT MIC L
2 MIC L GND
3 INT MIC R
4 MIC R GND
5 INT MIC Cl
6 MIC Cl GND
7 INT MIC Cr
8 MIC Cr GND
MIC L
MIC R
MIC CL
MIC CR
CN552 13P (A-11)
1 MIC R OUT
2 AUDIO GND
3 MIC L OUT
4 AUDIO 4.9V
5 CHASIS GND
6 ZOOM CONT
7 MIC GAIN ADJ
8 HIFI/WIND
9 MIC MONO /ST
10 EXT MIC DET
11 SS GND
12 SIRCS SIG
13 SS 4.9V
TO AU-149 BOARD CN801
(See Page 4-39)
ZOOM-STEREO BALANCE
H.P.F
MIX
REG
RIPPLE FILTER
GAIN CONT
BIAS
M BIAS
LCH OUT
MONO ON
RCH OUT
EXT MIC ON
HPF ON/OFF
Q005 UN5110-QRS-TX SWITCH
Q003 UN5210-TX MUTE SWITCH
Q551 (1/2) FC13-TR HiFi/WIND SWITCH
Q551 (2/2) FC13-TR HiFi/WIND SWITCH
Q006 2SB1218A-QRS-TX NOTCH FILTER
Q007 2SB1218A-QRS-TX NOTCH FILTER
Q004 POWER OFF MUTE DETECT
Q004 UN9213
Q008 UN5110-QRS-TX SWITCH
Q002 UN5210-TX MUTE SWITCH
D556 MA110-TX
D557 MA110-TX
D554 MA8082-L/M/H-TX
D551 MA8082-L/M/H-TX
(MA110)
16

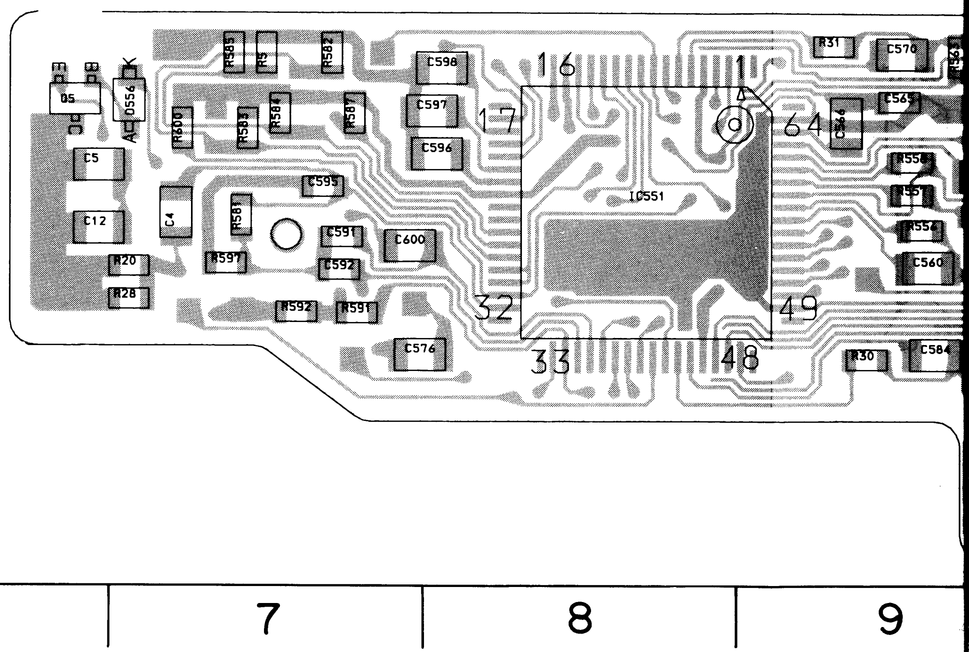
MA-184 (MIC AMPLIFIER) PRINTED WIRING BOARD

– Ref. No. MA-184 BOARD: 16,000 Series –

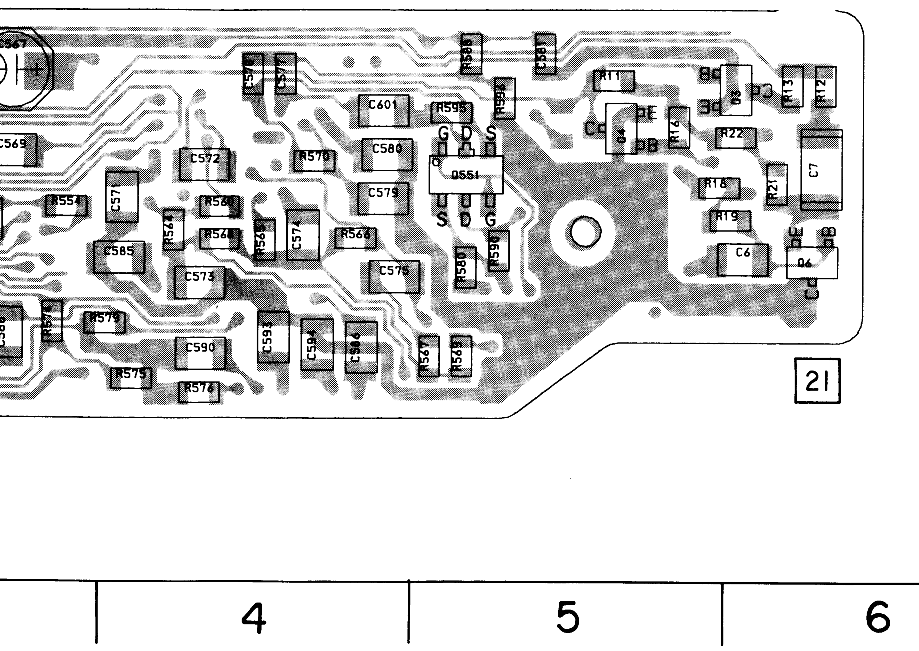
MA-184 BOARD (COMPONENT SIDE)


A
B
C
16
1
2
3
4
5
6
MA-184P
1-651-106
IC552
Q7
Q2
Q8
Q551
D557
C9
C8
C11
C13
R24
R23
R29
R25
R27
C567
C554
L552
L553
C569
C601
C580
C579
C578
R570
R11
R12
R13
R18
R19
R21
R22
C6
C7
D6
21

MA-184 BOARD (CONDUCTOR SIDE)

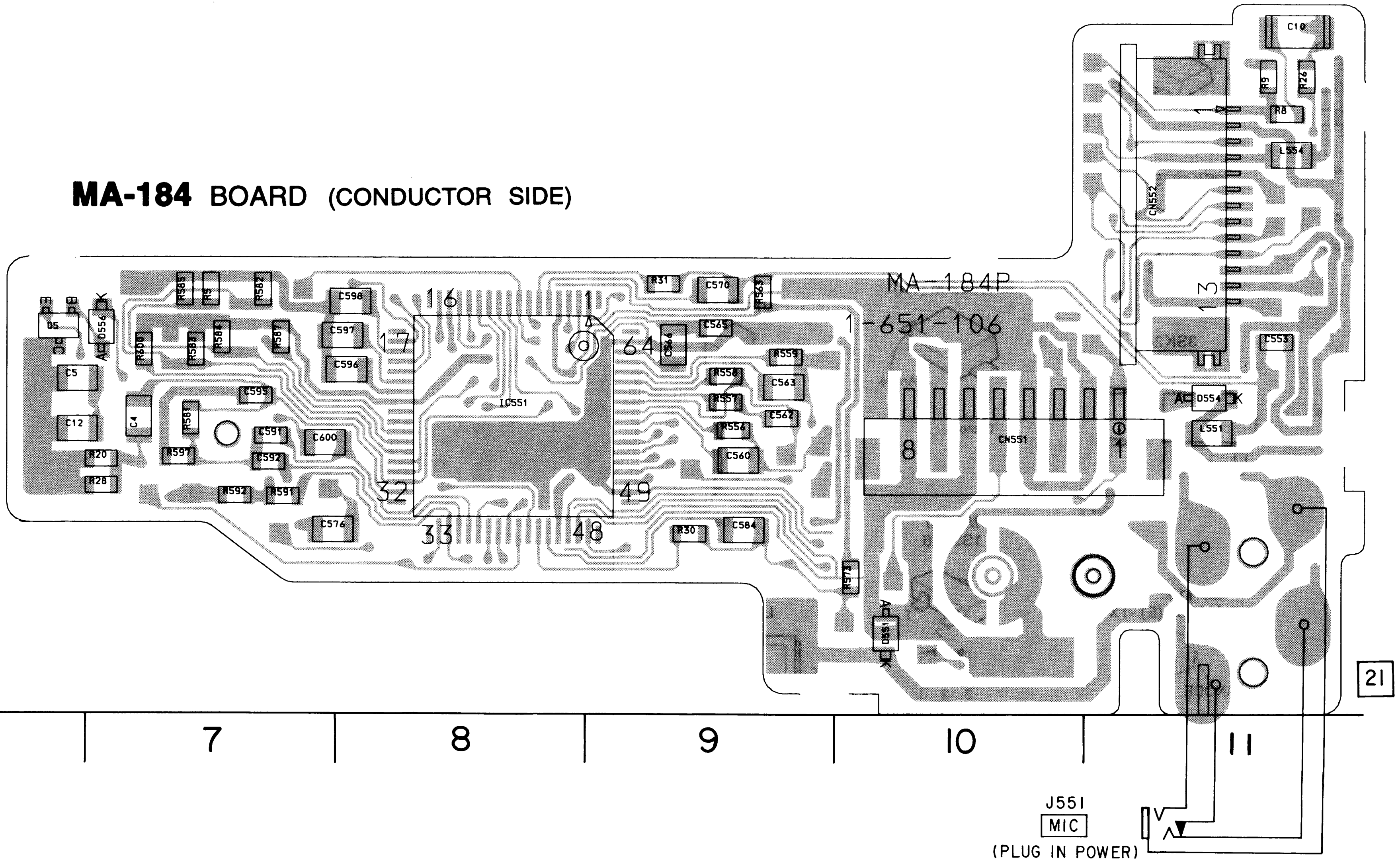

7
8
9
IC551
1
16
17
32
33
48
49
64
D5
D556
C5
C12
C4
R20
R28
C598
C597
C596
C595
C600
C576
C570
C584
R31
R30

MPONENT SIDE)



C569
R554
C571
C585
R574
R579
R575
R576
C590
C573
C572
R560
R564
R565
C593
C594
C574
C586
R570
C601
C580
C579
C575
R566
R567
R569
R595
R586
R594
R581
Q551
G D S
S D G
R590
R589
R11
C4
Q4
E
B
R16
Q3
R22
R13
R12
C7
R18
R19
R21
C6
Q6
21
4
5
6

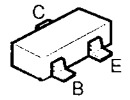
MA-184 BOARD (CONDUCTOR SIDE)



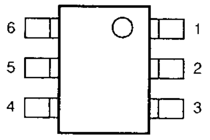
D5
D556
A
K
R600
C5
C12
C4
R20
R28
R585
R5
R582
R583
R584
R587
C598
C597
C596
C595
R581
R597
C591
C592
C600
R592
R591
C576
IC551
16
1
17
64
32
49
33
48
R31
C570
C565
R563
C566
R559
R558
C563
R557
C562
R556
C560
R30
C584
R572
D551
MA-184P
1-651-106
CN551
8
1
CN552
1
13
C10
R9
R26
R8
L554
L553
D554
L551
21
7
8
9
10
11
J551
MIC
(PLUG IN POWER)

4-3. SEMICONDUCTOR LEAD LAYOUTS

DTA123JE-TL
DTC143TE-TL
DTC144TU
MSA1586-BC
MSC4116-BC
RN1302-TE85L
UN5111-TX
UN511D-TX
UN5113
UN5210
UN5213
UN5215
UN9113
UN9213
2SA1162
2SA1163-G
2SA1611-M5M6
2SA1865-TL
2SB1218A-QRS
2SB1295-UL5
2SB1462Q
2SC1623-L5L6
2SC2223-F13
2SC4116-YG
2SC4154
2SC4178-F14
2SC4555-5.6.7
2SC4627-C (TXE)
2SC4919-TL
2SD2216Q

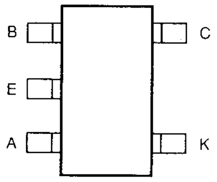


FC13

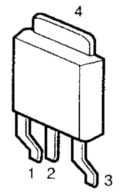


1: Gate 1
2: Drain 1
3: Source 1
4: Gate 2
5: Drain 2
6: Source 2

FP101
FP102

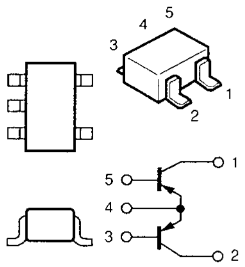


MTD9N10ET4

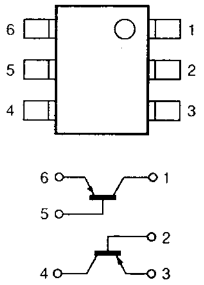


1: BASE
2: COLLECTOR
3: EMITTER
4: COLLECTOR

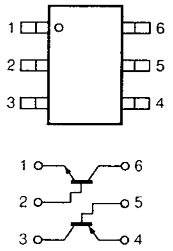
XN1113


4 5
3
1
2
5
1
4
3
2

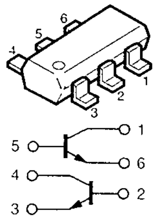
XN4401
XP4501


6
5
4
1
2
3
6
1
5
2
4
3

XN4312
XN4601
XP4312
XP4601


1
2
3
6
5
4
1
6
2
5
3
4

XN4113
XN4115
XN4213
XN4501


6
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4
3
2
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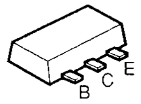
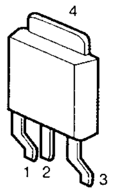
1
6
4
2
3

2SB1122-S
2SB798-DL
2SD1615A-GP

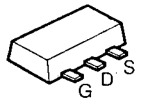


2SB1574- (TX)



1: BASE
2: COLLECTOR
3: EMITTER
4: COLLECTOR

2SJ244JY-TR



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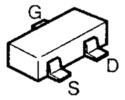
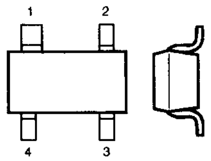
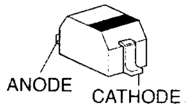


3SK248

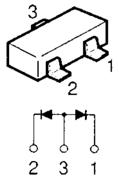


1: Source
2: Gate 1
3: Gate 2
4: Drain

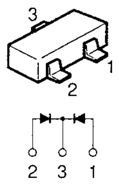
MA110
MA365 (E) -TX


ANODE
CATHODE

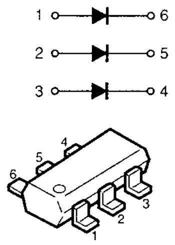
MA141WK
MA152WA
1SS181



MA142WK- (TX)



MA6S121- (TX)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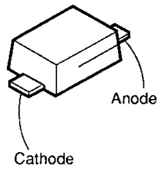
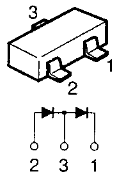
1
2
3

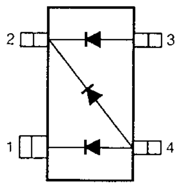
MA4Z082WA-TX
MA728
MA8082-M (TX)


Anode
Cathode

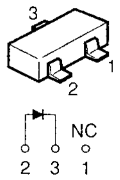
MA740
1SS226



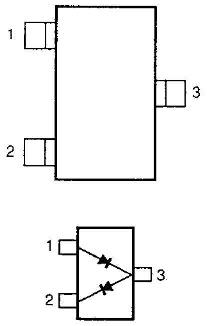
MA796-TX



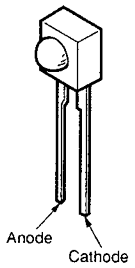
1SS250



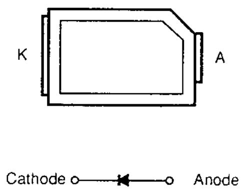
1SS302



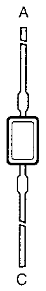
BR4371F


Anode
Cathode

LN1251C


K
A
Cathode
Anode

TLS221



SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

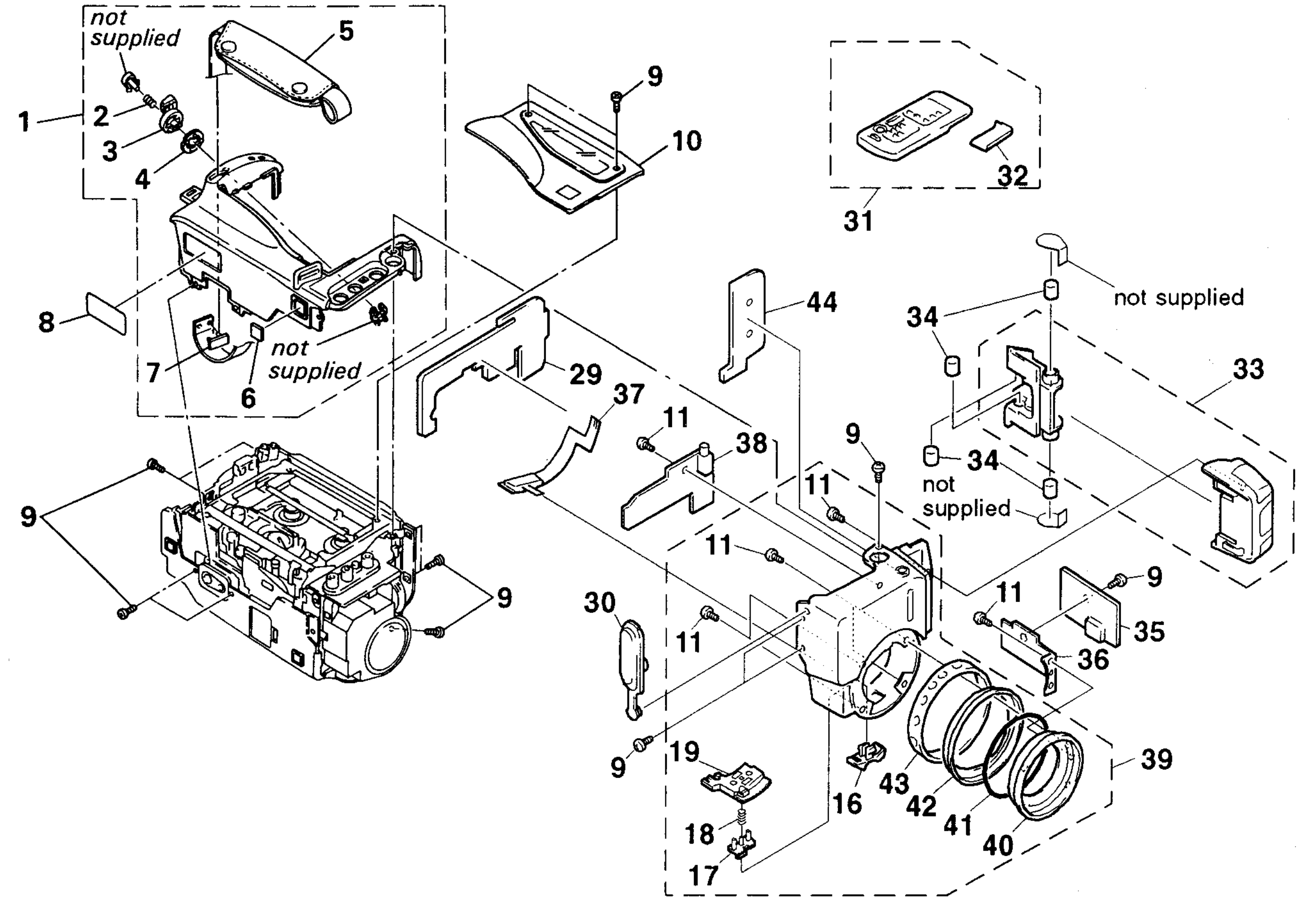
NOTE:

- －XX, －X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

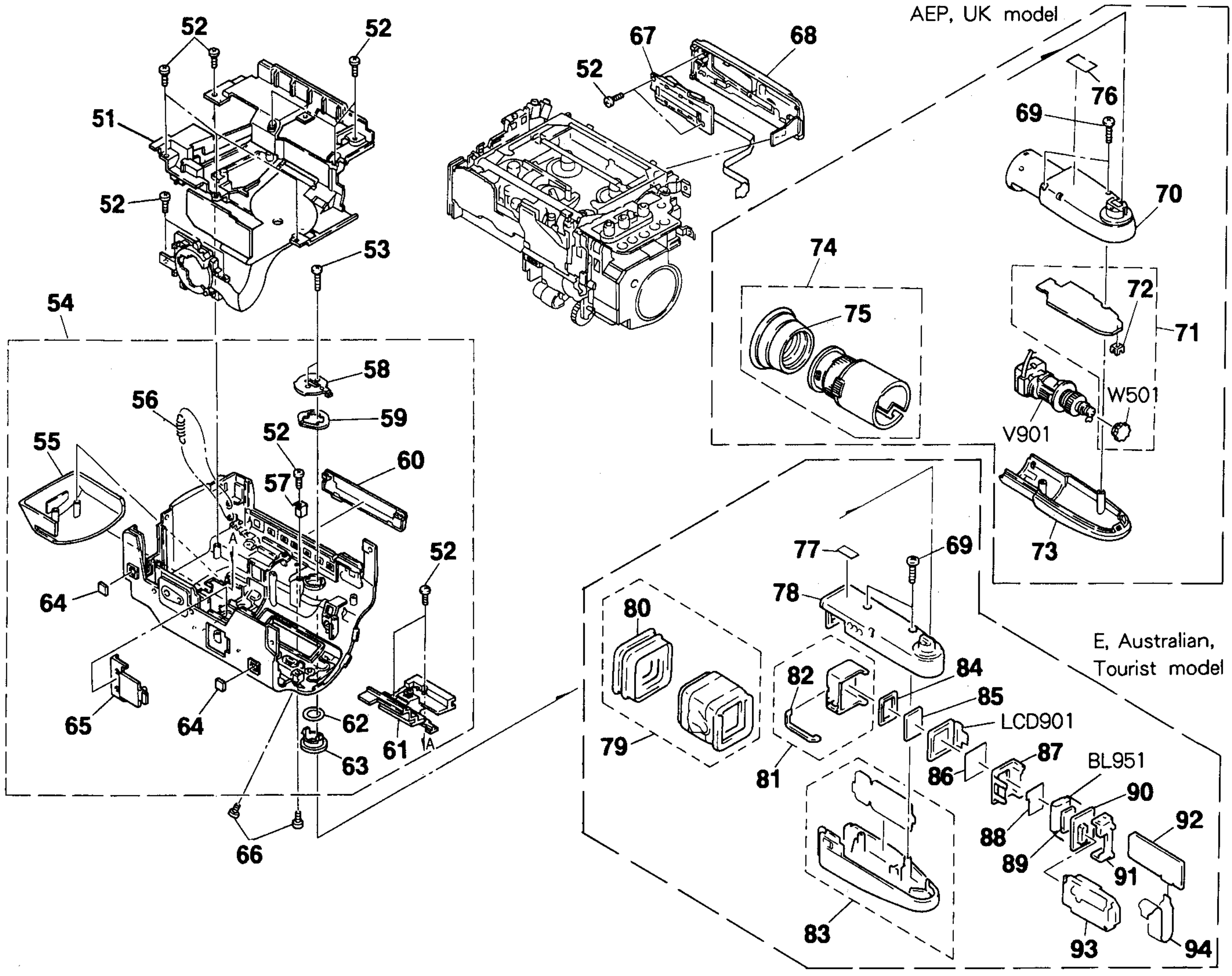
- AUS : Australian model
- JE : Tourist model

5-1-1. CABINET (L) AND FRONT PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remarks
1	X-3943-659-1	CABINET (L) ASSY	
2	3-578-221-00	SPRING, COMPRESSION	
3	3-942-985-01	KNOB, STAND-BY	
4	3-736-364-01	SPRING	
5	3-736-807-01	BELT, GRIP	
* 6	3-949-383-01	FOOT, RUBBER	
7	3-942-895-01	STOPPER, BELT	
* 8	3-957-647-01	LABEL, MODEL NUMBER (AE)(AEP)	
* 8	3-958-674-01	LABEL, MODEL NUMBER (UK)(EXCEPT AEP)	
9	3-719-381-01	SCREW (M2X4)	
10	X-3943-662-1	LID ASSY, CASSETTE	
11	3-719-601-01	SCREW (B2X5), TAPPING	
16	3-955-332-01	KNOB, POWER	
* 17	3-955-334-01	LOCK, POWER KNOB	
18	3-303-973-01	SPRING, COMPRESSION	
* 19	3-957-640-01	SLIDER (H), POWER KNOB	
* 29	3-957-653-01	CUSHION (ISO) (H)	
30	3-942-986-21	COVER, JACK	
31	1-466-795-21	REMOTE COMMANDER (RMT-702)(E)	
31	1-466-795-31	REMOTE COMMANDER (RMT-702)(EXCEPT E)	
32	3-742-854-01	COVER, BATTERY	
32	3-742-854-11	COVER, BATTERY	
33	X-3943-661-1	HOLDER ASSY, MICROPHONE	
34	1-542-180-11	MICROPHONE ASSY	
35	A-7053-872-A	MF-244 BOARD, COMPLETE	
* 36	3-957-641-01	HOLDER, MF	
37	1-692-821-11	SWITCH ASSY BLOCK	
38	A-7063-871-A	MA-184 BOARD, COMPLETE	
39	X-3943-660-1	PANEL ASSY, FRONT (AEP, UK)	
39	X-3943-931-1	PANEL ASSY, FRONT (E, AUS, JE)	
* 40	3-957-634-01	SCREW, FILTER	
41	3-957-700-01	RING (MF), O	
* 42	3-957-635-01	RING, MF	
43	3-957-639-01	RUBBER, MF KNOB	
44	3-958-908-01	CUSHION (3)	

5-1-2. CABINET (R) AND EVF ASSEMBLIES

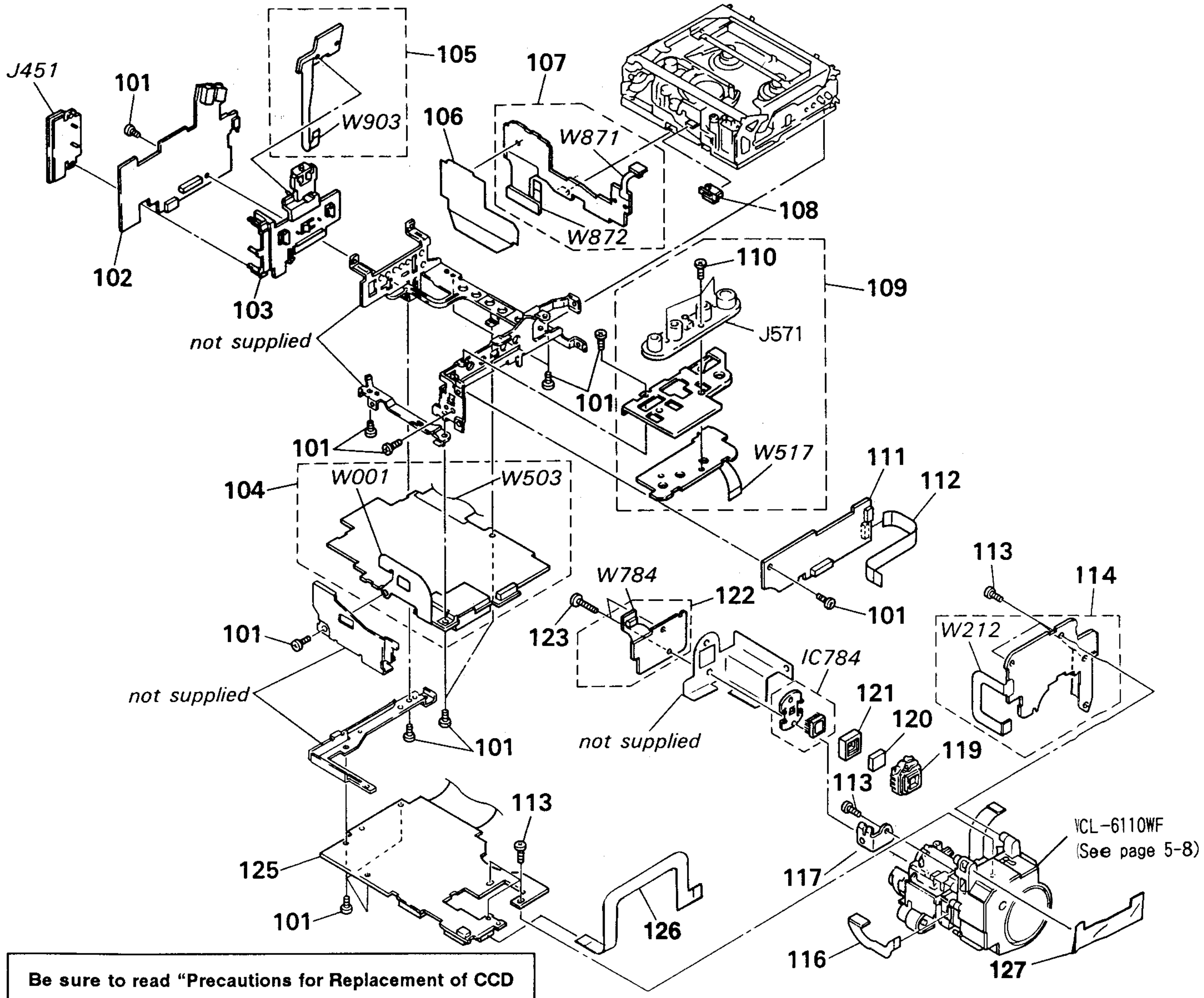


Ref. No.	Part No.	Description	Remarks
51	1-467-529-11	SWITCH BLOCK, CONTROL (AEP, UK)	
51	1-467-529-21	SWITCH BLOCK, CONTROL (E, AUS, JE)	
52	3-719-601-01	SCREW (B2X5), TAPPING	
53	3-740-546-41	SCREW (M2X10) (AEP, UK)	
53	3-740-546-61	SCREW (M2X10.5) (E, AUS, JE)	
54	X-3943-655-1	CABINET (R) ASSY (AEP, UK)	
54	X-3943-932-1	CABINET (R) ASSY (E, AUS, JE)	
55	3-955-285-21	DOOR, CF	
56	3-570-896-00	SPRING, TENSION	
57	3-747-178-01	REINFORCEMENT, TILT LOCK	
58	3-747-111-01	PLATE, LOCK, TILT	
59	3-747-110-01	SPRING, LEAF, TILT	
60	X-3943-656-1	DOOR ASSY, CONTROL	
61	3-955-286-01	SLIDER, CF	
62	3-747-112-01	RING, TILT	
63	3-747-109-01	SLEEVE, EVF	
* 64	3-949-383-01	FOOT, RUBBER	
65	X-3943-612-1	LID ASSY, LITHIUM BATTERY	
66	3-719-381-01	SCREW (M2X4)	
67	1-692-257-41	SWITCH, PUSH (ZOOM)	
68	X-3941-894-1	LID ASSY, LS	
69	3-713-790-31	SCREW (M2X8), TAPPING, P3	
70	X-3941-292-1	CABINET (L) ASSY, EVF (AEP, UK)	
71	A-7063-220-A	VF-42P BOARD, COMPLETE (AEP, UK)	
72	3-942-888-01	HOLDER, LED (AEP, UK)	
73	3-943-077-81	CABINET (R), EVF (AEP, UK)	
74	X-3941-603-1	HOLDER ASSY, FINDER (AEP, UK)	

Ref. No.	Part No.	Description	Remarks
75	3-946-426-01	EYE CUP (AEP, UK)	
* 76	3-704-235-01	LABEL, CAUTION (UK)	
77	3-948-291-01	LABEL (3), EVF (E, AUS, JE)	
78	X-3943-657-1	CABINET (L) ASSY, EVF (E, AUS, JE)	
79	X-3943-518-1	HOLDER ASSY, FINDER (E, AUS, JE)	
80	3-948-162-01	EYE CUP (E, AUS, JE)	
81	X-3943-368-1	HOLDER ASSY, LCD (E, AUS, JE)	
* 82	3-947-711-01	GUIDE, LIGHT, INNER TALLY (E, AUS, JE)	
83	X-3943-658-1	CABINET (R) ASSY, EVF (E, AUS, JE)	
* 84	3-955-339-11	SPACER, LCD (E, AUS, JE)	
* 85	3-955-340-01	FILTER, LCD (E, AUS, JE)	
86	3-949-846-01	ILLUMINATOR, BL (E, AUS, JE)	
87	X-3943-227-1	HOLDER ASSY, BL (E, AUS, JE)	
* 88	3-955-570-01	PLATE, CONDENSE, BL (E, AUS, JE)	
* 89	3-955-573-01	SPACER (E), BL (E, AUS, JE)	
90	A-7071-913-A	FF-75 BOARD, COMPLETE (E, AUS, JE)	
91	3-947-714-11	HOLDER (R), LCD (E, AUS, JE)	
92	A-7063-813-A	VF-68P BOARD, COMPLETE (E, AUS, JE)	
93	A-7063-814-A	VF-69P BOARD, COMPLETE (E, AUS, JE)	
94	1-643-806-11	FP-539 FLEXIBLE BOARD (E, AUS, JE)	
BL951	1-519-746-21	TUBE, FLUORESCENT (0.7INCH) (E, AUS, JE)	
LCD901	8-753-010-01	LCX004AK-1 (E, AUS, JE)	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB) (AEP, UK)	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1-3. MAIN BOARDS ASSEMBLY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W903
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W871
W872
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110
109
J571
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W517
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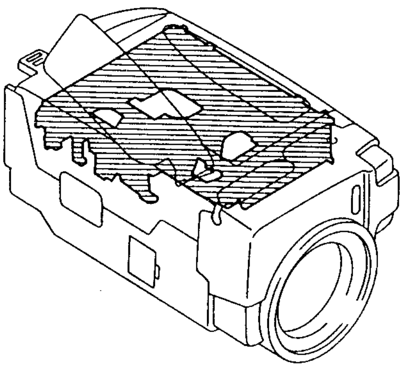
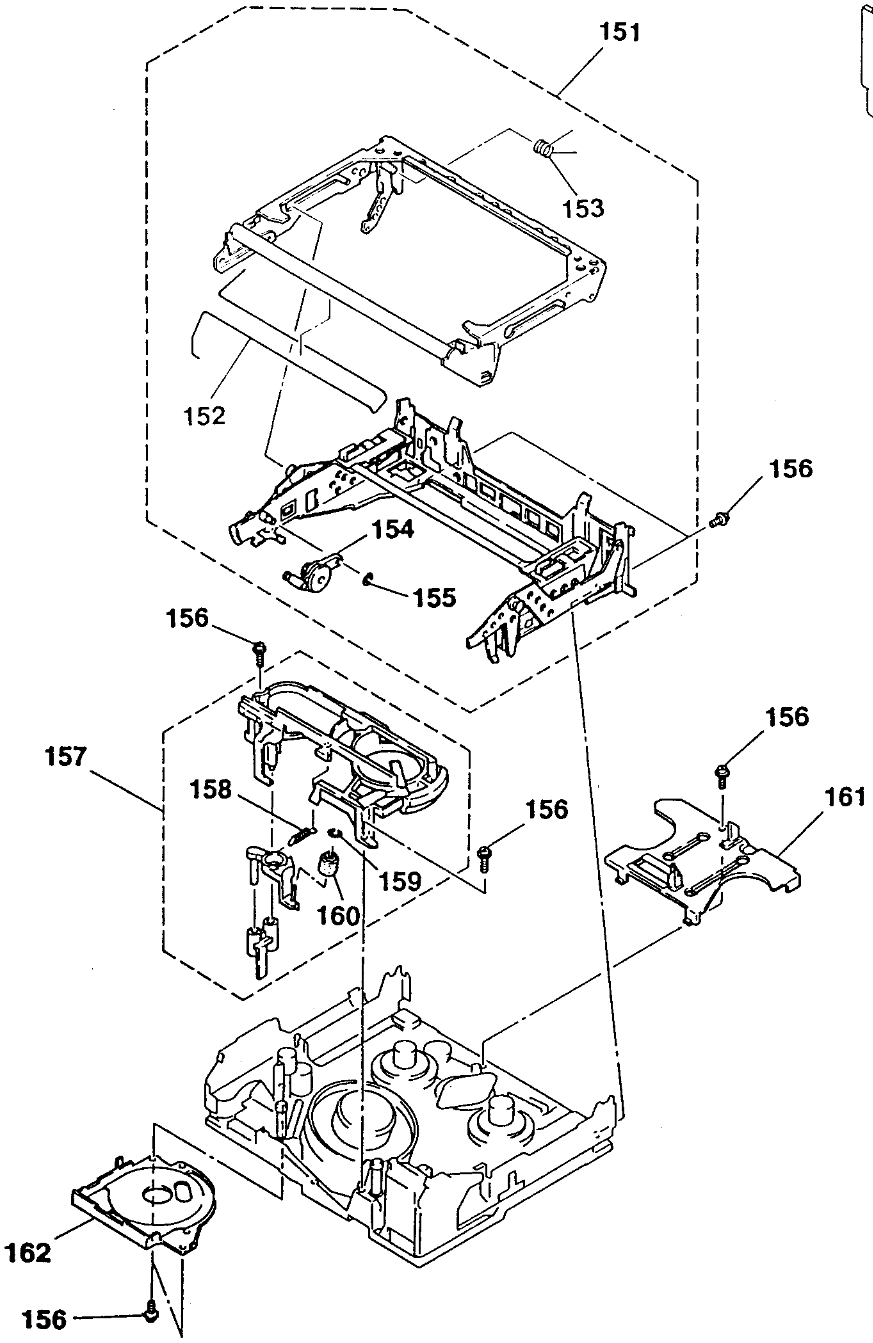
104
W001
W503
111
112
113
114
W212
W784
122
123
101
101
IC784
121
120
119
not supplied
101
not supplied
113
113
VCL-6110WF
(See page 5-8)
125
117
126
101
116
127

Be sure to read "Precautions for Replacement of CCD Imager" on page 4-49 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
101	3-713-786-51	SCREW (M2X3)	
102	A-7063-868-A	DD-62 BOARD, COMPLETE	
* 103	3-955-282-01	HOLDER, SW	
104	A-7063-875-A	VS-99 BOARD, COMPLETE (AEP, UK)	
104	A-7063-972-A	VS-99 BOARD, COMPLETE (E, AUS, JE)	
105	A-7071-862-A	SW-222 BOARD, COMPLETE	
* 106	3-955-756-01	SHEET, INSULATED TRIPOD	
107	A-7063-878-A	SL-37 BOARD, COMPLETE	
108	1-691-471-11	CONNECTOR, TRANSLATION 11P	
109	A-7063-869-A	COM ASSY, JK-108	
110	3-719-381-01	SCREW (M2X4)	
111	A-7063-877-A	AU-149 BOARD, COMPLETE	
112	1-751-487-11	CABLE, FLEXIBLE FLAT (FFC-104)	
113	3-719-601-01	SCREW (B2X5), TAPPING	
114	A-7063-874-A	YP-13 BOARD, COMPLETE	
116	1-650-068-11	FP-17 FLEXIBLE BOARD	
* 117	3-955-287-01	SHEET METAL (A), FIXED	
119	3-946-856-01	ADAPTOR (H), CCD FITTING	
119	3-946-856-11	ADAPTOR (H), CCD FITTING	
120	1-547-529-21	FILTER BLOCK, OPTICAL	
121	3-946-857-01	RUBBER (S), SEAL	
121	3-946-857-11	RUBBER (S), SEAL	
122	A-7063-873-A	CD-105 BOARD, COMPLETE	
123	3-947-268-01	SCREW (B TIGHT) (2), TAPPING	
125	A-7063-876-A	VC-132 BOARD, COMPLETE	
126	1-651-109-11	FP-90 FLEXIBLE BOARD	
* 127	3-956-359-01	COVER, SENSOR	
IC784	A-7030-371-A	CCD BLOCK ASSY (ICX059AK-1) (CCD IMAGER)	
J451	1-537-281-41	TERMINAL BOARD	
J571	1-537-373-51	JACK BOARD ASSY (VIDEO, AUDIO L/R, RFU DC OUT)	
W001	1-651-108-11	FP-30 FLEXIBLE BOARD	
W212	1-650-063-11	FP-8 FLEXIBLE BOARD	
W503	1-650-066-11	FP-11 FLEXIBLE BOARD	
W517	1-650-065-11	FP-10 FLEXIBLE BOARD	
W871	1-642-186-11	FP-437 FLEXIBLE BOARD	
W872	1-650-069-11	FP-697 FLEXIBLE BOARD	
W784	1-644-944-11	FP-580 FLEXIBLE BOARD	
W903	1-650-070-11	FP-699 FLEXIBLE BOARD	

5-1-4. CASSETTE COMPARTMENT HOLDER ASSEMBLY

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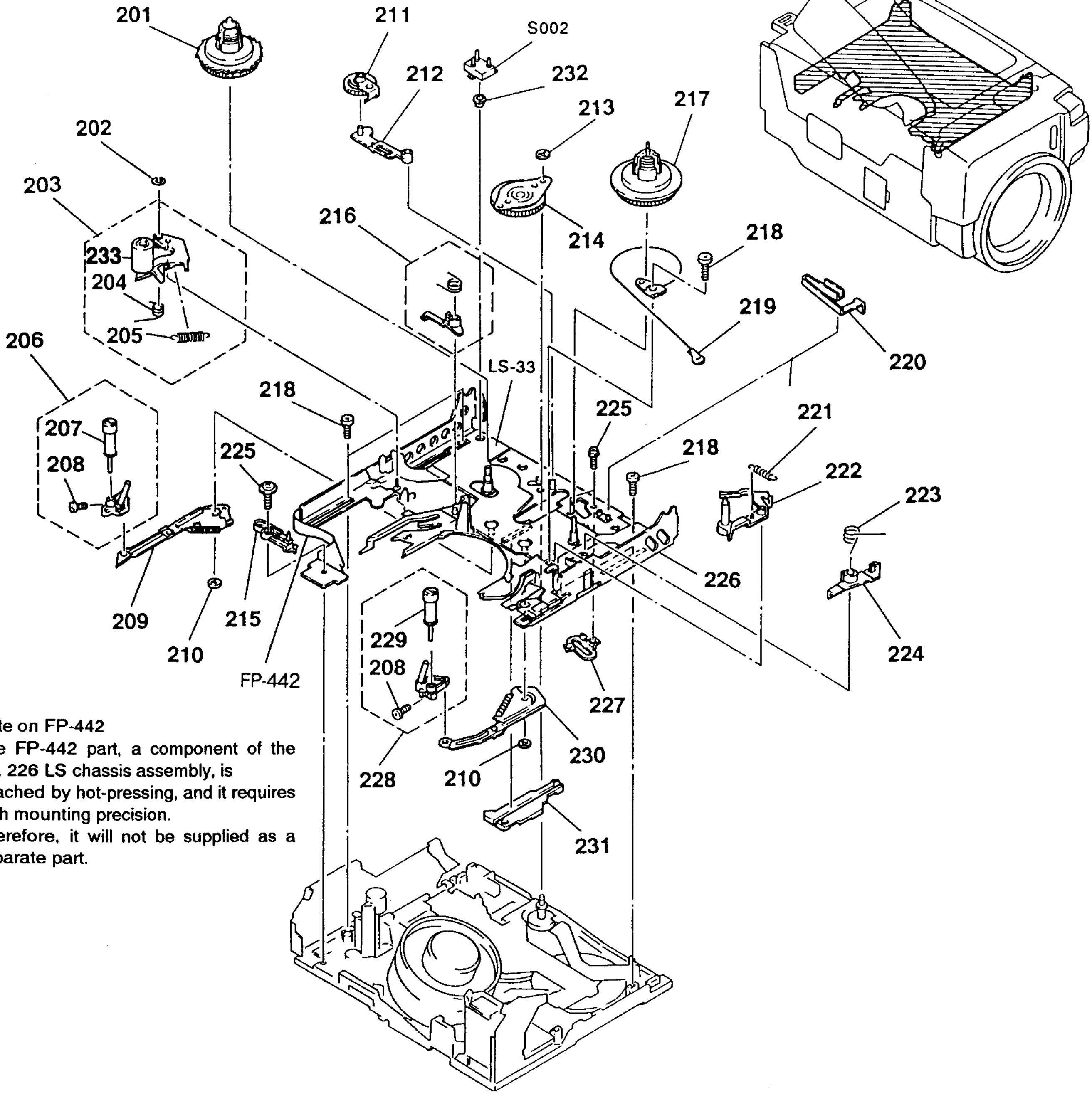
Ref. No.	Part No.	Description	Remarks
151	A-7040-312-K	CASSETTE COMPARTMENT BLOCKASSY	
152	3-945-773-01	BAR, TORSION	
153	3-945-771-01	SPRING, TORSION	
154	X-3941-287-2	DAMPER ASSY	
155	3-315-384-31	WASHER, STOPPER	
156	3-947-503-01	SCREW (M1.4X2.5)	
157	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
158	3-945-760-01	SPRING, TENSION	
159	3-321-393-01	WASHER, STOPPER	
160	X-3166-813-1	ROLLER ASSY, HC	
161	X-3941-280-1	RETAINER ASSY, GOOSENECK	
162	3-945-733-01	COVER, CAPSTAN	

5-1-5. LS CHASSIS ASSEMBLY


201
211
S002
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214
218
233
204
219
205
220
206
LS-33
218
225
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207
225
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226
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229
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FP-442
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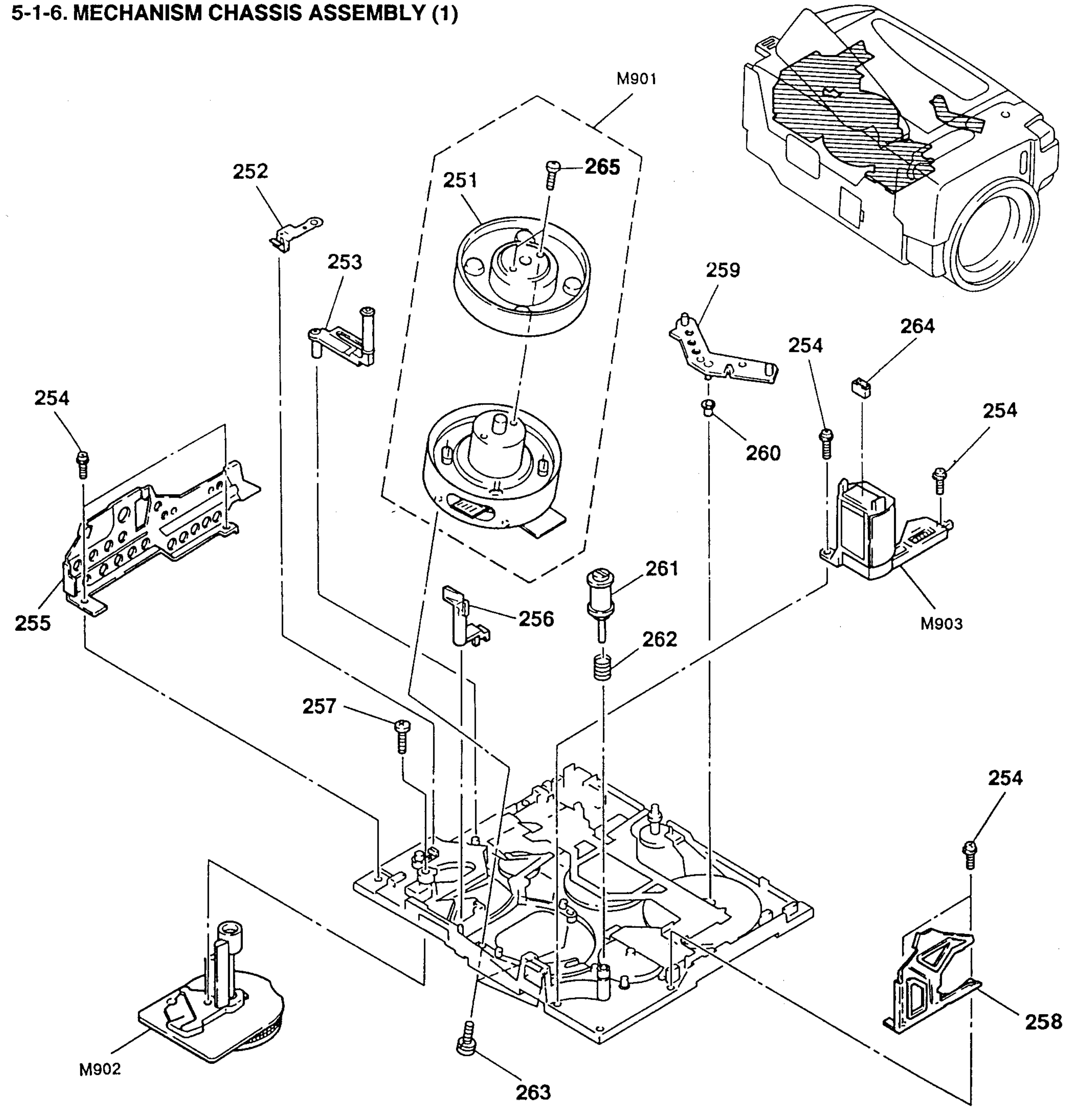
231

Note on FP-442
The FP-442 part, a component of the No. 226 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remarks
201	X-3941-274-1	TABLE ASSY, REEL, T	
202	3-331-007-21	WASHER	
203	X-3941-271-5	ARM ASSY, PINCH	
204	3-945-743-01	SPRING, TORSION	
205	3-945-783-01	SPRING, TENSION	
206	A-7040-322-A	GUIDE (BASE) (T) BLOCK ASSY(2)	
207	X-3941-756-1	ROLLER ASSY (2), TG6	
208	3-947-504-01	SCREW (M1.2X2)	
209	X-3941-267-1	ARM (T) ASSY, GUIDE	
210	3-669-465-00	WASHER (1.5), STOPPER	
211	X-3941-273-1	SOFT ASSY, T	
212	3-945-753-01	ARM, T SOFT	
213	3-726-829-01	WASHER, STOPPER	
214	X-3941-279-5	GEAR ASSY, GOOSENECK	
215	3-947-644-01	RETAINER, TG5 (BASE)	
216	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
217	X-3941-275-1	TABLE ASSY, REEL, S	
218	3-945-756-01	SCREW (M1.4X3)	
219	X-3941-277-1	STRING BLOCK ASSY	
220	3-945-801-01	BRAKE, S SOFT	
221	3-954-327-01	SPRING, TENSION	
222	X-3941-276-1	TG1 ASSY	
223	3-945-752-01	SPRING, TORSION	
224	3-945-799-01	BRAKE, S HARD	
225	3-947-503-01	SCREW (M1.4X2.5)	
226	X-3943-307-1	CHASSIS ASSY, LS	
227	3-945-784-01	PLATE, CAM, LS	
228	A-7040-396-A	BASE (S) BLOCK ASSY (3), GUIDE	
229	X-3941-755-1	ROLLER ASSY (2), TG3	
230	X-3941-266-1	ARM (S) ASSY, GUIDE	
231	3-945-837-01	SLIDER, GL	
232	3-949-881-01	SLEEVE	
233	X-3695-416-1	PINCH ROLLER ASSY	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP-HG)	

5-1-6. MECHANISM CHASSIS ASSEMBLY (1)


M901
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M903
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M902
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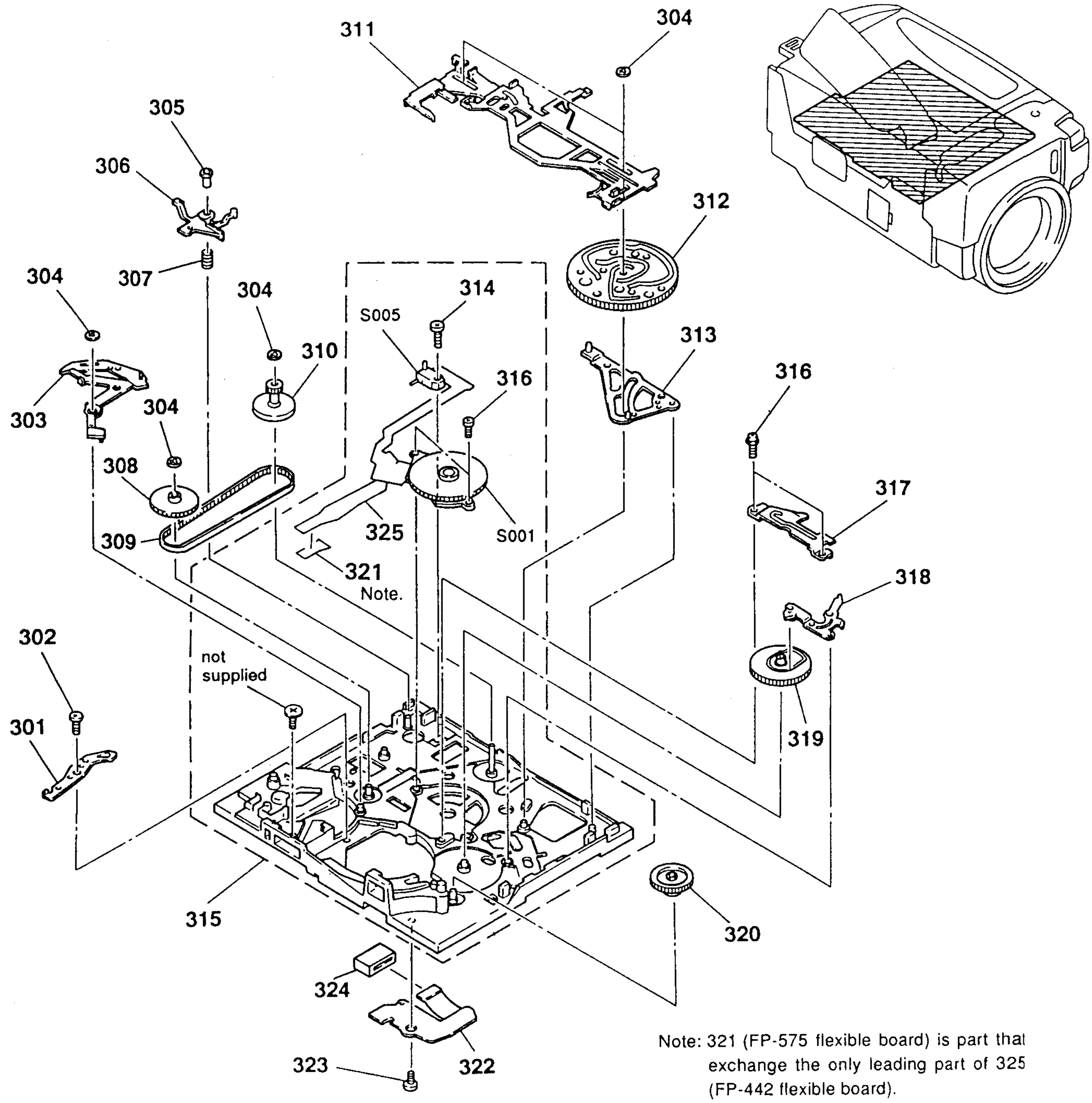
263

Ref. No.	Part No.	Description	Remarks
251	A-7049-610-A	DRUM ASSY UPPER (DGR-96-R)	
252	3-945-822-01	SPRING, LEAF, TG7 ARM	
253	A-7040-305-A	ARM BLOCK ASSY, TG7	
254	3-947-503-01	SCREW (M1.4X2.5)	
255	X-3941-255-1	PLATE (T) ASSY, SIDE	
256	3-945-735-01	ARM, HC CONVERSION	
257	3-713-786-71	SCREW (M2X5)	
258	3-945-691-01	PLATE (S), SIDE	
259	3-945-701-01	ARM, LS	
260	3-945-702-01	ROLLER, LS	
261	X-3942-193-1	ROLLER ASSY (2), TG2	
262	3-956-651-01	SPRING, COMPRESSION	
263	3-686-493-01	SCREW (M2X5), P1	
264	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
265	7-627-853-57	PRECISION SCREW +2X5	
M901	A-7048-669-A	DRUM ASSY (DGH-96A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM	

5-1-7. MECHANISM CHASSIS ASSEMBLY (2)


311
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306
312
304
307
304
314
S005
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313
316
316
303
304
308
317
325
S001
309
321
Note.
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302
not supplied
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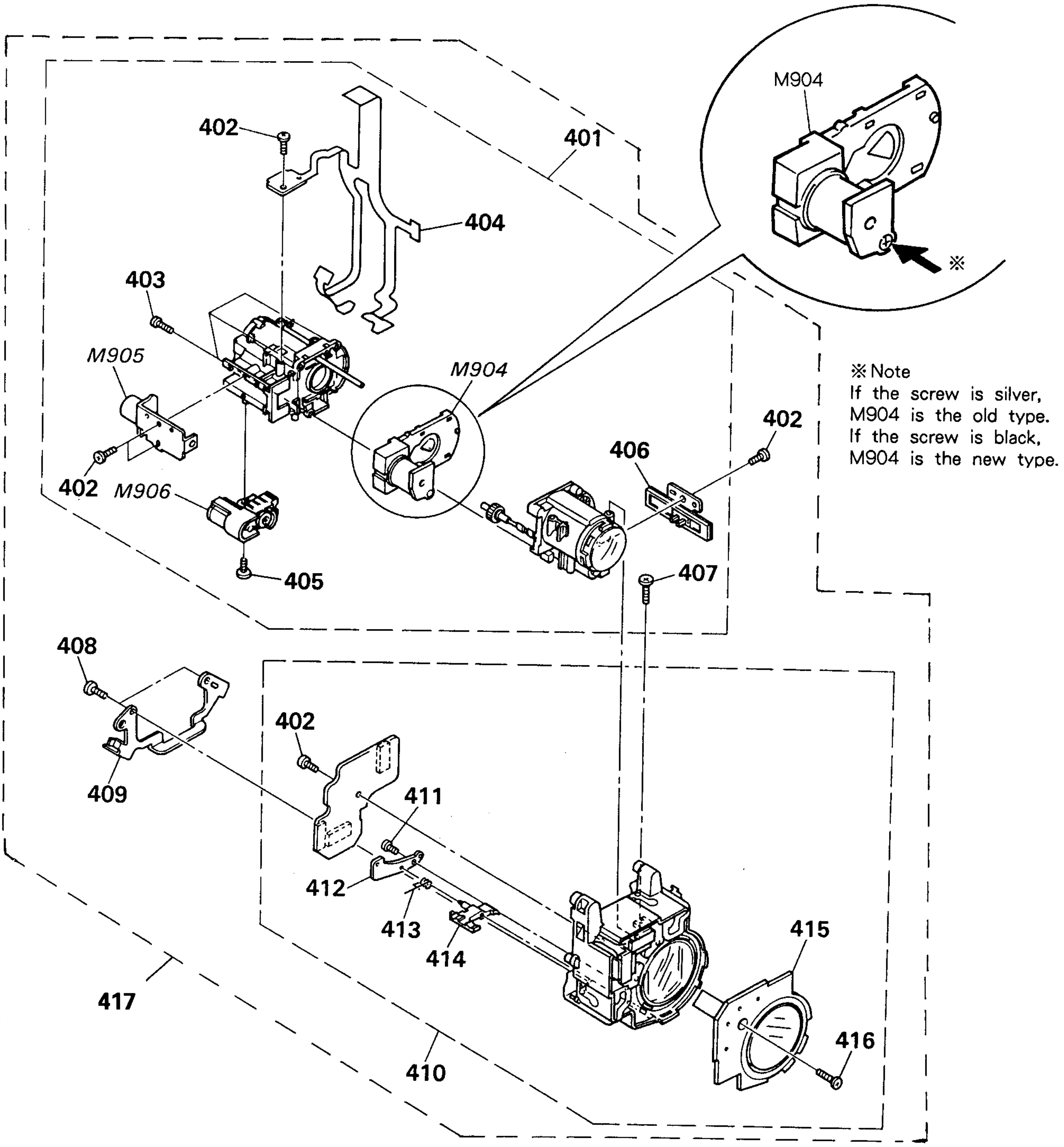
Note: 321 (FP-575 flexible board) is part thal exchange the only leading part of 325 (FP-442 flexible board).

Ref. No.	Part No.	Description	Remarks
301	3-945-734-01	ARM, HC DRIVING	
302	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
303	X-3941-259-1	ARM ASSY, PINCH PRESS	
304	3-726-829-01	WASHER, STOPPER	
305	3-945-730-01	SLEEVE, EJECT	
306	3-945-706-01	LEVER, EJECT	
307	3-945-729-01	SPRING, COMPRESSION	
308	X-3941-256-1	GEAR ASSY, CHANGE	
309	3-944-539-01	BELT, RELAY	
310	3-945-695-01	PULLEY, RELAY	
311	X-3941-260-1	SLIDER ASSY, M	
312	3-945-696-02	CAM	
313	X-3941-258-1	ARM ASSY, GL	
314	3-713-786-71	SCREW (M2X5)	
315	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
316	3-947-503-01	SCREW (M1.4X2.5)	
317	3-945-722-01	RETAINER, GEAR	
318	X-3941-257-1	ARM ASSY, FF	
319	3-945-697-01	GEAR (B), L	
320	3-945-700-01	GEAR (A), L	
321	1-645-271-11	FP-575 FLEXIBLE BOARD	
322	1-641-643-12	FP-444 FLEXIBLE BOARD	
323	3-945-756-01	SCREW (M1.4X3)	
324	1-691-254-13	CONNECTOR, TRANSLATION 10P	
325	1-641-639-13	FP-442 FLEXIBLE BOARD	
S001	1-572-986-11	SWTICH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH	

5-1-8. ZOOM LENS ASSEMBLY (VCL-6110WF)


M904
※
402
401
404
403
M905
M904
402
406
402
M906
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※Note
If the screw is silver,
M904 is the old type.
If the screw is black,
M904 is the new type.

Ref. No.	Part No.	Description	Remark
401	3-708-805-01	LENS BLOCK	
402	3-708-302-01	SCREW P1.7X4	
403	3-708-799-01	SCREW P1.7X5.5	
404	3-708-790-01	FPC, MAIN	
405	3-708-449-01	SCREW P1.7X5	
406	3-708-791-01	ENCORDER, ZOOM	
407	3-708-798-01	SCREW P1.7X5	
408	3-708-797-01	SCREW P2X4	
409	3-708-789-01	BRACKET	
410	A-7030-482-A	VAP BLOCK	
411	3-708-804-01	SCREW P1.7X3.5	
412	3-708-803-01	PLATE, LOCK	
413	3-708-802-01	SPRING, LOCK	
414	3-708-801-01	LEVER, LOCK	
415	3-708-787-01	RING, F	
416	3-708-795-01	SCREW P2X7	
417	1-547-635-21	LENS, ZOOM(VCL-6110WF)	
M904	3-708-792-01	METER, IG(IRIS)	
M905	3-708-793-01	MOTOR, STEPPING (FOCUS)	
M906	3-708-794-01	MOTOR, PZ (ZOOM)	

5-2. ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- AUS : Australian model
- JE : Tourist model

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- –XX, –X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS :
  uF : μF

- RESISTORS
  All resistors are in ohms.
  METAL : metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- COILS
  uH : μH
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA... : μA... , uPA... , μPA... ,
  uPB... , μPB... ,uPC... , μPC... ,
  uPD..., μPD...

Ref. No.	Part No.	Description			Remarks
	A-7063-877-A	AU-149 BOARD, COMPLETE			
		**********************			
		(Ref. No. 5,000 Series)			
		< CAPACITOR >			
C801	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C802	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C803	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C804	1-104-753-11	TANTAL. CHIP	47uF	20%	6.3V
C805	1-126-607-11	ELECT CHIP	47uF	20%	4V
C806	1-104-753-11	TANTAL. CHIP	47uF	20%	6.3V
C807	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C808	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C809	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C811	1-126-607-11	ELECT CHIP	47uF	20%	4V
C812	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C813	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C814	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C820	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C821	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C822	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C824	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C825	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C826	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C827	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C828	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C829	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C830	1-135-148-21	TANTAL. CHIP	1.5uF	20%	10V
C832	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C833	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C834	1-164-346-11	CERAMIC CHIP	1uF		16V
C835	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C838	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C840	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C841	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C842	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C843	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C844	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C845	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C847	1-135-148-21	TANTAL. CHIP	1.5uF	20%	10V
C848	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C849	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C850	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C851	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C852	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C853	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C855	1-128-003-11	ELECT CHIP	22uF	20%	4V
C856	1-128-003-11	ELECT CHIP	22uF	20%	4V
C857	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C858	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C859	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C860	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C864	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C865	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C870	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C891	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
		< CONNECTOR >			
CN801	1-691-492-21	CONNECTOR, FFC/FPC 13P			
* CN802	1-691-931-11	CONNECTOR, BOARD TO BOARD 38P			
CN803	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P			
		< DIODE >			
D801	8-719-404-46	DIODE	MA110		
D805	8-719-404-35	DIODE	MA141WK		
D806	8-719-404-35	DIODE	MA141WK		
D808	8-719-420-15	DIODE	MA8082-M(TX)		
D809	8-719-420-15	DIODE	MA8082-M(TX)		
D810	8-719-404-46	DIODE	MA110		

Ref. No.	Part No.	Description			Remarks
		< FILTER >			
FL801	1-236-837-21	FILTER, BAND PASS			
FL802	1-236-838-21	FILTER, BAND PASS			
		< IC >			
IC801	8-759-159-94	IC	LA7491W-TBM		
		< TRANSISTOR >			
Q801	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q802	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q803	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q804	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q806	8-729-402-42	TRANSISTOR	UN5213		
Q807	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q808	8-729-420-50	TRANSISTOR	UN5215		
Q810	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q811	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q812	8-729-402-81	TRANSISTOR	XN4501		
Q813	8-729-402-81	TRANSISTOR	XN4501		
Q820	8-729-402-42	TRANSISTOR	UN5213		
Q821	8-729-402-42	TRANSISTOR	UN5213		
Q823	8-729-420-24	TRANSISTOR	2SB1218A-QRS		
		< RESISTOR >			
R417	1-216-817-11	METAL CHIP	470	5%	1/16W
R436	1-216-817-11	METAL CHIP	470	5%	1/16W
R437	1-216-833-11	METAL CHIP	10K	5%	1/16W
R801	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R802	1-216-842-11	METAL CHIP	56K	5%	1/16W
R803	1-216-810-11	METAL CHIP	120	5%	1/16W
R805	1-216-810-11	METAL CHIP	120	5%	1/16W
R807	1-216-817-11	METAL CHIP	470	5%	1/16W
R809	1-216-817-11	METAL CHIP	470	5%	1/16W
R811	1-216-839-11	METAL CHIP	33K	5%	1/16W
R812	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R813	1-216-842-11	METAL CHIP	56K	5%	1/16W
R814	1-216-833-11	METAL CHIP	10K	5%	1/16W
R815	1-216-839-11	METAL CHIP	33K	5%	1/16W
R816	1-216-833-11	METAL CHIP	10K	5%	1/16W
R817	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R819	1-216-821-11	METAL CHIP	1K	5%	1/16W
R820	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W
R821	1-216-833-11	METAL CHIP	10K	5%	1/16W
R823	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W
R824	1-216-841-11	METAL CHIP	47K	5%	1/16W
R825	1-218-732-11	METAL CHIP	47K	0.50%	1/16W
R826	1-218-722-11	METAL CHIP	18K	0.50%	1/16W
R827	1-216-839-11	METAL CHIP	33K	5%	1/16W
R828	1-216-833-11	METAL CHIP	10K	5%	1/16W
R829	1-216-841-11	METAL CHIP	47K	5%	1/16W
R830	1-216-821-11	METAL CHIP	1K	5%	1/16W
R831	1-216-864-11	METAL CHIP	0	5%	1/16W
R832	1-216-833-11	METAL CHIP	10K	5%	1/16W
R833	1-216-864-11	METAL CHIP	0	5%	1/16W
R834	1-216-833-11	METAL CHIP	10K	5%	1/16W
R835	1-216-821-11	METAL CHIP	1K	5%	1/16W
R836	1-216-821-11	METAL CHIP	1K	5%	1/16W
R837	1-216-821-11	METAL CHIP	1K	5%	1/16W
R838	1-216-821-11	METAL CHIP	1K	5%	1/16W
R839	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R840	1-216-836-11	METAL CHIP	18K	5%	1/16W
R841	1-216-837-11	METAL CHIP	22K	5%	1/16W
R842	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R843	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R844	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R845	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R846	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R847	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R848	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R849	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R850	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R851	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R852	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R853	1-216-817-11	METAL CHIP	470	5%	1/16W
R858	1-216-821-11	METAL CHIP	1K	5%	1/16W
R859	1-216-833-11	METAL CHIP	10K	5%	1/16W
R860	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R862	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R863	1-216-838-11	METAL CHIP	27K	5%	1/16W
R864	1-216-838-11	METAL CHIP	27K	5%	1/16W
R881	1-216-864-11	METAL CHIP	0	5%	1/16W
R882	1-216-841-11	METAL CHIP	47K	5%	1/16W
R883	1-216-841-11	METAL CHIP	47K	5%	1/16W
R885	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R886	1-216-847-11	METAL CHIP	150K	5%	1/16W
R890	1-216-864-11	METAL CHIP	0	5%	1/16W
R891	1-216-821-11	METAL CHIP	1K	5%	1/16W

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A-7063-873-A CD-105 BOARD, COMPLETE
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(Ref. No. 8,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C784	1-128-004-11	ELECT CHIP	10uF	20%	16V
C785	1-128-013-11	ELECT CHIP	1uF	20%	50V
C786	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C787	1-126-607-11	ELECT CHIP	47uF	20%	4V
C788	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C789	1-162-637-11	CERAMIC CHIP	0.47uF		16V
C790	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V

Ref. No.	Part No.	Description			Remarks
		< DIODE >			
D784	8-719-404-46	DIODE	MA110		
		< COIL >			
L784	1-412-032-11	INDUCTOR CHIP	100uH		
		< TRANSISTOR >			
Q784	8-729-232-86	TRANSISTOR	2SK1875-BL/V		
Q785	8-729-102-07	TRANSISTOR	2SC2223-F13		
		< RESISTOR >			
R784	1-216-840-11	METAL CHIP	39K	5%	1/16W
R785	1-216-820-11	METAL CHIP	820	5%	1/16W
R786	1-216-845-11	METAL CHIP	100K	5%	1/16W
R787	1-216-833-11	METAL CHIP	10K	5%	1/16W
R788	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R789	1-216-809-11	METAL CHIP	100	5%	1/16W
R790	1-216-845-11	METAL CHIP	100K	5%	1/16W
R791	1-216-857-11	METAL CHIP	1M	5%	1/16W
		< FLAT CABLE >			
W784	1-644-944-11	FP-580 FLEXIBLE BOARD			

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A-7063-868-A DD-62 BOARD, COMPLETE

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(Ref. No. 1,000 Series)

		< CAPACITOR >			
C445	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C446	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C448	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C449	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C450	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C451	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C452	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C453	1-135-165-11	TANTAL. CHIP	33uF	20%	16V
C454	1-126-204-11	ELECT CHIP	47uF	20%	16V
C455	1-126-204-11	ELECT CHIP	47uF	20%	16V
C456	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C457	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C458	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C459	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C460	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C461	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C462	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C463	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C464	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C465	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V

Ref. No.	Part No.	Description			Remarks
C466	1-164-174-11	CERAMIC CHIP	0.0082uF	10%	25V
C467	1-164-730-11	CERAMIC CHIP	0.0012uF	10%	50V
C468	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C469	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C470	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C471	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C472	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C473	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C474	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C475	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C476	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C477	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C478	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C479	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C480	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C481	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C482	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C483	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C484	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C485	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C486	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C487	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C488	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C489	1-165-178-11	CERAMIC CHIP	6.8uF		16V
C490	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C491	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C492	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C493	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C494	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C495	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C496	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C497	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C498	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C499	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
		< CONNECTOR >			
CN451	1-691-521-11	CONNECTOR, BOARD TO BOARD 40P			
CN452	1-691-485-21	CONNECTOR, FFC/FPC 6P			
		< DIODE >			
D450	8-719-404-46	DIODE	MA110		
D451	8-719-420-15	DIODE	MA8082-M(TX)		
D452	8-719-420-15	DIODE	MA8082-M(TX)		
D453	8-719-420-15	DIODE	MA8082-M(TX)		
D454	8-719-420-15	DIODE	MA8082-M(TX)		
D455	8-719-027-77	DIODE	MA796-TX		
D460	8-719-404-46	DIODE	MA110		

DD-62

Ref. No.	Part No.	Description	Remarks
		< IC >	
IC450	8-759-060-94	IC MB3785APFV-G-BND-ER	
IC451	8-759-062-00	IC MB3788PFV-G-BND-ER	
		< JACK >	
J450	1-569-809-11	JACK (SMALL TYPE) (HEAD PHONES)	
J451	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)	
J452	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		< COIL >	
L450	1-410-192-51	INDUCTOR CHIP 1uH	
L451	1-410-192-51	INDUCTOR CHIP 1uH	
L452	1-410-192-51	INDUCTOR CHIP 1uH	
L456	1-406-846-11	COIL, CHOKE 4.7uH	
L457	1-424-643-11	COIL, CHOKE 10uH	
L458	1-424-641-11	COIL, CHOKE 22uH	
L459	1-424-643-11	COIL, CHOKE 10uH	
L460	1-424-641-11	COIL, CHOKE 22uH	
L461	1-424-642-11	COIL, CHOKE 47uH	
L462	1-424-641-11	COIL, CHOKE 22uH	
L463	1-424-641-11	COIL, CHOKE 22uH	
L464	1-412-056-11	INDUCTOR CHIP 4.7uH	
L465	1-412-054-21	INDUCTOR CHIP 2.2uH	
L466	1-412-054-21	INDUCTOR CHIP 2.2uH	
L467	1-412-066-21	INDUCTOR CHIP 220uH	
L468	1-412-066-21	INDUCTOR CHIP 220uH	
L469	1-412-054-21	INDUCTOR CHIP 2.2uH	
L470	1-412-056-11	INDUCTOR CHIP 4.7uH	
L471	1-412-056-11	INDUCTOR CHIP 4.7uH	
L472	1-412-054-21	INDUCTOR CHIP 2.2uH	
		< IC LINK >	
⚠PS450	1-533-284-11	RINK, CHIP IC	
⚠PS451	1-533-284-11	RINK, CHIP IC	
⚠PS452	1-533-284-11	RINK, CHIP IC	
		< TRANSISTOR >	
Q450	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q451	8-729-823-82	TRANSISTOR FP101	
Q452	8-729-823-82	TRANSISTOR FP101	
Q453	8-729-804-41	TRANSISTOR 2SB1122-S	
Q454	8-729-823-84	TRANSISTOR FP102	
Q455	8-729-823-82	TRANSISTOR FP101	
Q456	8-729-823-84	TRANSISTOR FP102	
Q457	8-729-017-10	TRANSISTOR 2SJ244JY-TR	
Q458	8-729-403-35	TRANSISTOR UN5113	
Q459	8-729-420-24	TRANSISTOR 2SB1218A-QRS	

Ref. No.	Part No.	Description	Remarks
		< RESISTOR >	
R066	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R067	1-218-707-11	METAL CHIP 4.3K 0.50% 1/16W	
R068	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R069	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R111	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R112	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R113	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R114	1-218-721-11	METAL CHIP 16K 0.50% 1/16W	
R115	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R116	1-218-714-11	METAL CHIP 8.2K 0.50% 1/16W	
R117	1-218-736-11	METAL CHIP 68K 0.50% 1/16W	
R118	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R119	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R227	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R228	1-218-730-11	METAL CHIP 39K 0.50% 1/16W	
R229	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R484	1-216-041-00	METAL CHIP 470 5% 1/10W	
R485	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R486	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R487	1-216-041-00	METAL CHIP 470 5% 1/10W	
R488	1-216-041-00	METAL CHIP 470 5% 1/10W	
R489	1-216-041-00	METAL CHIP 470 5% 1/10W	
R490	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R491	1-216-009-00	METAL CHIP 22 5% 1/10W	
R492	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R493	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R494	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R495	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R496	1-216-296-00	METAL CHIP 0 5% 1/8W	
R497	1-216-296-00	METAL CHIP 0 5% 1/8W	
R498	1-216-296-00	METAL CHIP 0 5% 1/8W	
R862	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R863	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R864	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R865	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R866	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R867	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R868	1-218-727-11	METAL CHIP 30K 0.50% 1/16W	
R869	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R870	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R885	1-218-867-11	METAL CHIP 6.8K 0.50% 1/16W	
R886	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R887	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R888	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R889	1-218-722-11	METAL CHIP 18K 0.50% 1/16W	
R890	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R891	1-216-864-11	METAL CHIP 0 5% 1/16W	
R892	1-218-702-11	METAL CHIP 2.7K 0.50% 1/16W	
R893	1-216-041-00	METAL CHIP 470 5% 1/10W	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks

< SWITCH >

Ref. No.	Part No.	Description	Remarks
S451	1-572-467-21	SWITCH, PUSH (1 KEY) (EJECT)	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remarks
T450	1-423-820-21	TRANSFORMER, CONVERTER	

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A-7071-913-A FF-75 BOARD, COMPLETE (E, AUS, JE)
****
(Ref. No. 14,000 Series)

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN954	1-580-248-31	CONNECTOR BOARD TO BOARD 20P	

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A-7063-871-A MA-184 BOARD, COMPLETE
****
(Ref. No. 16,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C003	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C004	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C005	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C006	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C007	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C008	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C009	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C010	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C011	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C012	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C013	1-107-553-11	FILM CHIP	0.0056uF	2%	16V
C552	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C553	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C554	1-128-004-11	ELECT CHIP	10uF	20%	16V
C555	1-162-979-11	CERAMIC CHIP	0.0027uF	10%	50V
C556	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C557	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C559	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C560	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C561	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C562	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C563	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C564	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C565	1-162-979-11	CERAMIC CHIP	0.0027uF	10%	50V
C566	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C567	1-128-004-11	ELECT CHIP	10uF	20%	16V
C568	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C569	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C570	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C571	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C572	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C573	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C574	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C575	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C576	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C577	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C578	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C579	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C580	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C581	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C582	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C583	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C584	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C585	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C586	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C587	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C588	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C589	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C590	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C591	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C592	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C593	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C594	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C595	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C596	1-164-346-11	CERAMIC CHIP	1uF		16V
C597	1-164-346-11	CERAMIC CHIP	1uF		16V
C598	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C600	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C601	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C603	1-164-730-11	CERAMIC CHIP	0.0012uF	5%	50V

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN551	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P	
CN552	1-691-492-21	CONNECTOR, FFC/FPC 13P	

< DIODE >

Ref. No.	Part No.	Description		Remarks
D551	8-719-420-14	DIODE	MA8082-M	
D554	8-719-420-14	DIODE	MA8082-M	
D556	8-719-404-46	DIODE	MA110	
D557	8-719-404-46	DIODE	MA110	

< IC >

Ref. No.	Part No.	Description		Remarks
IC551	8-759-248-31	IC	BA7780KV-E2	
IC552	8-749-923-29	IC	RS-20E-T	

< JACK >

Ref. No.	Part No.	Description	Remarks
J551	1-691-737-11	JACK (SMALL TYPE) (MIC)	

< COIL >

Ref. No.	Part No.	Description	Remarks
L551	1-410-993-11	INDUCTOR CHIP 1uH	
L552	1-410-993-11	INDUCTOR CHIP 1uH	
L553	1-410-993-11	INDUCTOR CHIP 1uH	
L554	1-410-993-11	INDUCTOR CHIP 1uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remarks
Q002	8-729-420-44	TRANSISTOR UN5210	
Q003	8-729-420-44	TRANSISTOR UN5210	
Q004	8-729-429-18	TRANSISTOR UN9213	
Q005	8-729-921-08	TRANSISTOR DTC144TU	
Q006	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q007	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q008	8-729-921-08	TRANSISTOR DTC144TU	
Q551	8-729-010-80	TRANSISTOR FC13	

< RESISTOR >

Ref. No.	Part No.	Description	Remarks
R005	1-218-748-11	METAL CHIP 220K 0.50% 1/16W	
R008	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R009	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R011	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R012	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R013	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R016	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R017	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R018	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R019	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R020	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R021	1-218-670-11	METAL CHIP 120 0.50% 1/16W	
R022	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R023	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R024	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R025	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R026	1-218-670-11	METAL CHIP 120 0.50% 1/16W	
R027	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R028	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R029	1-218-272-11	METAL CHIP 5.1K 0.50% 1/16W	
R030	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R031	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R551	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R552	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R553	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R554	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R555	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R556	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R557	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R558	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R559	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R560	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R561	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R562	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R563	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R564	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R565	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R566	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R567	1-216-864-11	METAL CHIP 0 5% 1/16W	
R568	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R569	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R570	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R571	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R572	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R573	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R574	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R575	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R576	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R577	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R578	1-216-864-11	METAL CHIP 0 5% 1/16W	
R579	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R580	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R581	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R582	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R583	1-218-710-91	METAL CHIP 5.6K 0.50% 1/16W	
R584	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R585	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R587	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R588	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R590	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R591	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R592	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R593	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R595	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R596	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R597	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R600	1-216-841-11	METAL CHIP 47K 5% 1/16W	

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A-7063-878-A SL-37 BOARD, COMPLETE

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(Ref. No. 11,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remarks
C871	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C872	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C874	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C875	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C876	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C877	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C879	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN871	1-691-473-21	CONNECTOR, FFC/FPC 7P	
CN872	1-691-472-21	CONNECTOR, FFC/FPC 6P	
CN873	1-691-482-21	CONNECTOR, FFC/FPC 15P	

< IC >

Ref. No.	Part No.	Description	Remarks
IC871	8-759-059-09	IC LB8111V	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remarks
Q871	8-729-402-81	TRANSISTOR XN4501	

< RESISTOR >

Ref. No.	Part No.	Description			Remarks
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W
R873	1-216-845-11	METAL CHIP	100K	5%	1/16W
R877	1-216-845-11	METAL CHIP	100K	5%	1/16W
R878	1-216-840-11	METAL CHIP	39K	5%	1/16W
R879	1-216-174-00	METAL GLAZE	100	5%	1/8W
R881	1-216-864-11	METAL CHIP	0	5%	1/16W
R883	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R884	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R896	1-216-041-00	METAL CHIP	470	5%	1/10W
R897	1-216-041-00	METAL CHIP	470	5%	1/10W

< COMPOSITION CIRCUIT BLOCK >

Ref. No.	Part No.	Description	Remarks
RB871	1-236-424-11	NETWORK, RES 10K	
RB872	1-236-424-11	NETWORK, RES 10K	

< FLAT CABLE >

Ref. No.	Part No.	Description	Remarks
W871	1-642-186-11	FP-437 FLEXIBLE BOARD	
W872	1-650-069-11	FP-697 FLEXIBLE BOARD	

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A-7063-876-A VC-132 BOARD, COMPLETE

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(Ref. No. 6,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C600	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C601	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C602	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C603	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C604	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C605	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C607	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C608	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C609	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C612	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C613	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C614	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C616	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C617	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C618	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C619	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C620	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C621	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C622	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C623	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C624	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C625	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C626	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C627	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C628	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C629	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C632	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C633	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C634	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C641	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C642	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C643	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C644	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C645	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C646	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C647	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C648	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C649	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C650	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C651	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C652	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C653	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C654	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C655	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C656	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C657	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C658	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C659	1-128-003-11	ELECT CHIP	22uF	20%	4V
C660	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C661	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C662	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C663	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C664	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C665	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C667	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C668	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C669	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C670	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C673	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C674	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C675	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C676	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C677	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C678	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C679	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C680	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C681	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C686	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C712	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V

VC-132

Ref. No.	Part No.	Description			Remarks
C713	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C714	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C715	1-162-638-11	CERAMIC CHIP	1uF		16V
C716	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C717	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C718	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C719	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C720	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C721	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C722	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C723	1-162-638-11	CERAMIC CHIP	1uF		16V
C724	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C726	1-128-004-11	ELECT CHIP	10uF	20%	16V
C727	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C728	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C729	1-162-638-11	CERAMIC CHIP	1uF		16V
C740	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C741	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C742	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C743	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C744	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C745	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C746	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C747	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C748	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C749	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C750	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C751	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C752	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C753	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C754	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C755	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C756	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C757	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C758	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C761	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C765	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C766	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C767	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C768	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C771	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C772	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C773	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C902	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C903	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C905	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C906	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C907	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C908	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C909	1-164-346-11	CERAMIC CHIP	1uF		16V

Ref. No.	Part No.	Description			Remarks
C910	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C911	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C913	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C915	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C916	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C917	1-104-850-91	TANTAL. CHIP	6.8uF	20%	10V
C918	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C919	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C920	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C921	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C922	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C924	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C931	1-164-471-11	CERAMIC CHIP	680PF	5%	50V

< CONNECTOR >

Ref. No.	Part No.	Description
CN601	1-695-409-11	CONNECTOR, BOARD TO BOARD 16P
CN641	1-691-487-21	CONNECTOR, FFC/FPC 8P
CN711	1-573-361-11	CONNECTOR, FFC/FPC 21P
CN740	1-691-491-21	CONNECTOR, FFC/FPC 12P
CN743	1-691-485-21	CONNECTOR, FFC/FPC 6P
* CN901	1-750-982-21	CONNECTOR, BOARD TO BOARD 40P
CN903	1-691-486-11	CONNECTOR, FFC/FPC 7P

< TRIMMER >

Ref. No.	Part No.	Description
CT601	1-141-356-11	CAP, ADJ

< DIODE >

Ref. No.	Part No.	Description	
D601	8-719-404-46	DIODE	MA110
D602	8-719-404-35	DIODE	MA141WK
⚠D901	8-719-421-27	DIODE	MA728
D916	8-719-404-35	DIODE	MA141WK
D917	8-719-404-35	DIODE	MA141WK

< FILTER >

Ref. No.	Part No.	Description
FL643	1-239-352-11	FILTER, LOW PASS
FL901	1-406-452-11	COIL, OSC

< IC >

Ref. No.	Part No.	Description	
IC601	8-752-355-07	IC	CXD1267N-T4
IC602	8-752-353-25	IC	CXD1265R-T6
IC603	8-752-053-26	IC	CXA1399Q
IC604	8-752-060-50	IC	CXA1577R-T4
IC641	8-759-044-78	IC	AK6420F
IC653	8-759-257-91	IC	SC424603FUV(68HC11)
IC654	8-759-064-36	IC	MB88346BPFV
IC655	8-752-355-56	IC	CXD2104BN-T4
IC656	8-759-262-36	IC	CXD2133BR-T6
IC659	8-752-350-13	IC	CXD2130R-T6
IC660	8-752-358-10	IC	CXD2101BR-T6
IC661	8-759-031-58	IC	SC7SU04F
IC662	8-759-710-29	IC	NJM2235M

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
IC711	8-759-701-24	IC NJM3414M	
IC712	8-759-998-98	IC LM358D	
IC713	8-759-058-47	IC MPC1724VM	
IC714	8-759-998-96	IC LM324D	
IC715	8-759-823-51	IC LB1830M	
IC740	8-759-701-24	IC NJM3414M	
IC741	8-759-998-96	IC LM324D	
IC742	8-759-981-75	IC RC3403AM	
IC743	8-759-701-24	IC NJM3414M	
IC744	8-759-058-98	IC SC370605DR	
IC745	8-752-852-01	IC CXP80620A-031R	
IC901	8-759-044-78	IC AK6420F	
IC902	8-759-267-68	IC MB89098PFV-G-106-BND	
IC903	8-759-056-84	IC S-8420AF	
IC904	8-759-059-05	IC TL1596CPW-ELM1000	
IC905	8-759-168-42	IC uPD6461GS-606-GLG-E2	

< COIL >

Ref. No.	Part No.	Description	Remarks
L602	1-412-058-11	INDUCTOR CHIP 10uH	
L603	1-412-058-11	INDUCTOR CHIP 10uH	
L604	1-412-058-11	INDUCTOR CHIP 10uH	
L641	1-412-006-31	INDUCTOR CHIP 10uH	
L642	1-412-058-11	INDUCTOR CHIP 10uH	
L643	1-412-058-11	INDUCTOR CHIP 10uH	
L644	1-412-058-11	INDUCTOR CHIP 10uH	
L645	1-412-006-31	INDUCTOR CHIP 10uH	
L646	1-410-392-11	INDUCTOR CHIP 82uH	
L647	1-412-006-31	INDUCTOR CHIP 10uH	
L648	1-412-052-21	INDUCTOR CHIP 1uH	
L649	1-412-052-21	INDUCTOR CHIP 1uH	
L650	1-412-979-21	INDUCTOR 1uH	
L651	1-412-979-21	INDUCTOR 1uH	
L652	1-412-052-21	INDUCTOR CHIP 1uH	
L653	1-412-052-21	INDUCTOR CHIP 1uH	
L711	1-412-062-11	INDUCTOR CHIP 47uH	
L712	1-412-058-11	INDUCTOR CHIP 10uH	
L740	1-412-058-11	INDUCTOR CHIP 10uH	
L741	1-412-006-31	INDUCTOR CHIP 10uH	
L742	1-412-058-11	INDUCTOR CHIP 10uH	
L743	1-412-058-11	INDUCTOR CHIP 10uH	
L744	1-410-993-11	INDUCTOR CHIP 1uH	
L901	1-216-296-00	METAL CHIP 0 5% 1/8W	
L902	1-412-026-11	INDUCTOR CHIP 1uH	
L903	1-410-389-31	INDUCTOR CHIP 47uH	
L904	1-412-026-11	INDUCTOR CHIP 1uH	
L905	1-410-389-31	INDUCTOR CHIP 47uH	

< IC LINK >

Ref. No.	Part No.	Description	Remarks
⚠PS901	1-576-123-21	RINK, IC	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remarks
Q601	8-729-403-27	TRANSISTOR XN4401	
Q602	8-729-402-84	TRANSISTOR XN4601	
Q642	8-729-010-60	TRANSISTOR MSA1586-BC	
Q643	8-729-010-75	TRANSISTOR MSC4116-BC	
Q644	8-729-010-75	TRANSISTOR MSC4116-BC	
Q645	8-729-010-60	TRANSISTOR MSA1586-BC	
Q711	8-729-602-21	TRANSISTOR 2SC4154	
Q712	8-729-403-27	TRANSISTOR XN4401	
Q713	8-729-013-88	TRANSISTOR RN1302-TE85L	
Q901	8-729-420-10	TRANSISTOR XN4115	

< RESISTOR >

Ref. No.	Part No.	Description	Remarks
R601	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R602	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R603	1-216-864-11	METAL CHIP 0 5% 1/16W	
R604	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R605	1-218-721-11	METAL CHIP 16K 0.50% 1/16W	
R605	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R606	1-218-692-91	METAL CHIP 1K 0.50% 1/16W	
R606	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R607	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R608	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R609	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R610	1-216-805-11	METAL CHIP 47 5% 1/16W	
R611	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R612	1-216-801-11	METAL CHIP 22 5% 1/16W	
R613	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R614	1-216-816-11	METAL CHIP 390 5% 1/16W	
R615	1-216-864-11	METAL CHIP 0 5% 1/16W	
R616	1-216-864-11	METAL CHIP 0 5% 1/16W	
R636	1-216-864-11	METAL CHIP 0 5% 1/16W	
R637	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R638	1-216-864-11	METAL CHIP 0 5% 1/16W	
R640	1-216-864-11	METAL CHIP 0 5% 1/16W	
R641	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R642	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R643	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R644	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R645	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R646	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R647	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R648	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R649	1-216-864-11	METAL CHIP 0 5% 1/16W	
R650	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R651	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R652	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R653	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R654	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R655	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R656	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R657	1-216-857-11	METAL CHIP 1M 5% 1/16W	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
R661	1-216-864-11	METAL CHIP	0	5%	1/16W
R662	1-216-805-11	METAL CHIP	47	5%	1/16W
R663	1-216-857-11	METAL CHIP	1M	5%	1/16W
R664	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W
R668	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R669	1-216-864-11	METAL CHIP	0	5%	1/16W
R670	1-216-864-11	METAL CHIP	0	5%	1/16W
R671	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R673	1-216-845-11	METAL CHIP	100K	5%	1/16W
R674	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R675	1-216-838-11	METAL CHIP	27K	5%	1/16W
R676	1-216-839-11	METAL CHIP	33K	5%	1/16W
R677	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R678	1-216-837-11	METAL CHIP	22K	5%	1/16W
R679	1-216-847-11	METAL CHIP	150K	5%	1/16W
R680	1-216-839-11	METAL CHIP	33K	5%	1/16W
R681	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R682	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R683	1-216-837-11	METAL CHIP	22K	5%	1/16W
R684	1-216-839-11	METAL CHIP	33K	5%	1/16W
R694	1-216-815-11	METAL CHIP	330	5%	1/16W
R695	1-216-833-11	METAL CHIP	10K	5%	1/16W
R696	1-216-817-11	METAL CHIP	470	5%	1/16W
R697	1-216-817-11	METAL CHIP	470	5%	1/16W
R698	1-216-834-11	METAL CHIP	12K	5%	1/16W
R699	1-216-834-11	METAL CHIP	12K	5%	1/16W
R701	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R702	1-216-841-11	METAL CHIP	47K	5%	1/16W
R703	1-216-817-11	METAL CHIP	470	5%	1/16W
R704	1-216-841-11	METAL CHIP	47K	5%	1/16W
R705	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W
R707	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R708	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R709	1-216-857-11	METAL CHIP	1M	5%	1/16W
R710	1-216-821-11	METAL CHIP	1K	5%	1/16W
R711	1-216-815-11	METAL CHIP	330	5%	1/16W
R712	1-216-821-11	METAL CHIP	1K	5%	1/16W
R713	1-216-845-11	METAL CHIP	100K	5%	1/16W
R714	1-216-855-11	METAL CHIP	680K	5%	1/16W
R715	1-216-848-11	METAL CHIP	180K	5%	1/16W
R716	1-216-848-11	METAL CHIP	180K	5%	1/16W
R717	1-216-833-11	METAL CHIP	10K	5%	1/16W
R718	1-216-837-11	METAL CHIP	22K	5%	1/16W
R719	1-216-837-11	METAL CHIP	22K	5%	1/16W
R720	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R721	1-216-842-11	METAL CHIP	56K	5%	1/16W
R722	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R723	1-218-744-11	METAL CHIP	150K	0.50%	1/16W
R724	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R725	1-216-833-11	METAL CHIP	10K	5%	1/16W
R726	1-216-833-11	METAL CHIP	10K	5%	1/16W
R727	1-216-820-11	METAL CHIP	820	5%	1/16W
R728	1-216-841-11	METAL CHIP	47K	5%	1/16W
R729	1-216-837-11	METAL CHIP	22K	5%	1/16W
R730	1-216-851-11	METAL CHIP	330K	5%	1/16W
R731	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R732	1-216-837-11	METAL CHIP	22K	5%	1/16W
R733	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R734	1-216-838-11	METAL CHIP	27K	5%	1/16W
R735	1-216-134-00	METAL CHIP	2.2	5%	1/8W
R736	1-216-833-11	METAL CHIP	10K	5%	1/16W
R737	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R738	1-218-724-11	METAL CHIP	22K	0.50%	1/16W
R739	1-216-857-11	METAL CHIP	1M	5%	1/16W
R740	1-218-688-11	METAL CHIP	680	0.50%	1/16W
R741	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R742	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R743	1-218-740-11	METAL CHIP	100K	0.50%	1/16W
R744	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R745	1-218-708-11	METAL CHIP	4.7K	0.50%	1/16W
R746	1-218-688-11	METAL CHIP	680	0.50%	1/16W
R747	1-216-837-11	METAL CHIP	22K	5%	1/16W
R748	1-216-837-11	METAL CHIP	22K	5%	1/16W
R749	1-216-837-11	METAL CHIP	22K	5%	1/16W
R750	1-216-837-11	METAL CHIP	22K	5%	1/16W
R751	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R752	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R753	1-218-740-11	METAL CHIP	100K	0.50%	1/16W
R754	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R755	1-218-740-11	METAL CHIP	100K	0.50%	1/16W
R756	1-218-740-11	METAL CHIP	100K	0.50%	1/16W
R757	1-218-708-11	METAL CHIP	4.7K	0.50%	1/16W
R758	1-216-840-11	METAL CHIP	39K	5%	1/16W
R759	1-218-740-11	METAL CHIP	100K	0.50%	1/16W
R760	1-218-748-11	METAL CHIP	220K	0.50%	1/16W
R761	1-218-748-11	METAL CHIP	220K	0.50%	1/16W
R762	1-218-740-11	METAL CHIP	100K	0.50%	1/16W
R763	1-216-840-11	METAL CHIP	39K	5%	1/16W
R764	1-218-732-11	METAL CHIP	47K	0.50%	1/16W
R765	1-218-732-11	METAL CHIP	47K	0.50%	1/16W
R766	1-216-821-11	METAL CHIP	1K	5%	1/16W
R768	1-216-837-11	METAL CHIP	22K	5%	1/16W
R769	1-216-837-11	METAL CHIP	22K	5%	1/16W
R770	1-216-864-11	METAL CHIP	0	5%	1/16W
R771	1-216-864-11	METAL CHIP	0	5%	1/16W
R772	1-216-864-11	METAL CHIP	0	5%	1/16W
R773	1-216-864-11	METAL CHIP	0	5%	1/16W
R778	1-216-814-11	METAL CHIP	270	5%	1/16W
R779	1-216-827-11	METAL CHIP	3.3K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R780	1-216-857-11	METAL CHIP	1M	5%	1/16W
R900	1-216-809-11	METAL CHIP	100	5%	1/16W
R902	1-216-821-11	METAL CHIP	1K	5%	1/16W
R906	1-216-853-11	METAL CHIP	470K	5%	1/16W
R907	1-216-853-11	METAL CHIP	470K	5%	1/16W
R908	1-216-817-11	METAL CHIP	470	5%	1/16W
R909	1-216-817-11	METAL CHIP	470	5%	1/16W
R910	1-216-853-11	METAL CHIP	470K	5%	1/16W
R911	1-216-853-11	METAL CHIP	470K	5%	1/16W
R912	1-216-817-11	METAL CHIP	470	5%	1/16W
R913	1-216-845-11	METAL CHIP	100K	5%	1/16W
R914	1-216-845-11	METAL CHIP	100K	5%	1/16W
R915	1-216-817-11	METAL CHIP	470	5%	1/16W
R916	1-216-845-11	METAL CHIP	100K	5%	1/16W
R917	1-216-853-11	METAL CHIP	470K	5%	1/16W
R918	1-216-841-11	METAL CHIP	47K	5%	1/16W
R919	1-216-845-11	METAL CHIP	100K	5%	1/16W
R920	1-216-864-11	METAL CHIP	0	5%	1/16W
R921	1-216-845-11	METAL CHIP	100K	5%	1/16W
R922	1-216-845-11	METAL CHIP	100K	5%	1/16W
R923	1-216-821-11	METAL CHIP	1K	5%	1/16W
R924	1-216-864-11	METAL CHIP	0	5%	1/16W
R925	1-216-821-11	METAL CHIP	1K	5%	1/16W
R926	1-216-809-11	METAL CHIP	100	5%	1/16W
R927	1-216-809-11	METAL CHIP	100	5%	1/16W
R929	1-216-817-11	METAL CHIP	470	5%	1/16W
R930	1-216-821-11	METAL CHIP	1K	5%	1/16W
R932	1-216-851-11	METAL CHIP	330K	5%	1/16W
R933	1-216-864-11	METAL CHIP	0	5%	1/16W
R935	1-216-841-11	METAL CHIP	47K	5%	1/16W
R936	1-216-841-11	METAL CHIP	47K	5%	1/16W
R937	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R938	1-216-845-11	METAL CHIP	100K	5%	1/16W
R939	1-216-821-11	METAL CHIP	1K	5%	1/16W
R940	1-216-821-11	METAL CHIP	1K	5%	1/16W
R941	1-216-817-11	METAL CHIP	470	5%	1/16W
R942	1-216-817-11	METAL CHIP	470	5%	1/16W
R944	1-216-841-11	METAL CHIP	47K	5%	1/16W
R945	1-216-841-11	METAL CHIP	47K	5%	1/16W
R946	1-216-817-11	METAL CHIP	470	5%	1/16W
R947	1-216-841-11	METAL CHIP	47K	5%	1/16W
R948	1-216-809-11	METAL CHIP	100	5%	1/16W
R949	1-218-702-11	METAL CHIP	2.7K	0.50%	1/16W
R950	1-216-809-11	METAL CHIP	100	5%	1/16W
R951	1-216-841-11	METAL CHIP	47K	5%	1/16W
R952	1-216-841-11	METAL CHIP	47K	5%	1/16W
R953	1-216-841-11	METAL CHIP	47K	5%	1/16W
R954	1-216-864-11	METAL CHIP	0	5%	1/16W
R955	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R956	1-216-864-11	METAL CHIP	0	5%	1/16W
R957	1-216-864-11	METAL CHIP	0	5%	1/16W
R958	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R959	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R960	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R962	1-216-845-11	METAL CHIP	100K	5%	1/16W
R963	1-216-845-11	METAL CHIP	100K	5%	1/16W
R964	1-216-821-11	METAL CHIP	1K	5%	1/16W
R965	1-216-821-11	METAL CHIP	1K	5%	1/16W
R966	1-216-864-11	METAL CHIP	0	5%	1/16W
R967	1-216-864-11	METAL CHIP	0	5%	1/16W
R968	1-216-809-11	METAL CHIP	100	5%	1/16W
R969	1-216-809-11	METAL CHIP	100	5%	1/16W
R970	1-216-809-11	METAL CHIP	100	5%	1/16W

< COMPOSITION CIRCUIT BLOCK >

Ref. No.	Part No.	Description
RB903	1-236-412-11	NETWORK, RES 1.0K
RB904	1-236-412-11	NETWORK, RES 1.0K
RB905	1-236-412-11	NETWORK, RES 1.0K
RB906	1-236-412-11	NETWORK, RES 1.0K
RB907	1-236-412-11	NETWORK, RES 1.0K
RB908	1-236-412-11	NETWORK, RES 1.0K
RB909	1-236-412-11	NETWORK, RES 1.0K
RB910	1-236-412-11	NETWORK, RES 1.0K
RB911	1-236-412-11	NETWORK, RES 1.0K
RB912	1-236-412-11	NETWORK, RES 1.0K
RB913	1-236-412-11	NETWORK, RES 1.0K

< VIBRATOR >

Ref. No.	Part No.	Description
X601	1-579-621-11	VIBRATOR, CRYSTAL 28.6363MHz
X641	1-760-150-21	VIBRATOR, CERAMIC 20MHz
X740	1-579-553-11	VIBRATOR 12MHz
X901	1-579-049-21	VIBRATOR, CRYSTAL 32kHz
XTL901	1-579-369-21	VIBRATOR 10MHz

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A-7063-220-A VF-42P BOARD, COMPLETE (AEP,UK)
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(Ref. No. 15,000 Series)

3-942-888-01 HOLDER, LED

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C501	1-126-176-11	ELECT	220uF	20%	10V
C502	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
⚠C504	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
⚠C505	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V
⚠C506	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V
⚠C507	1-127-515-11	ELECT(SOLID)	47uF	20%	6.3V
C508	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
C509	1-124-257-00	ELECT	2.2uF	20%	50V
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
C511	1-126-090-11	ELECT 82uF 20%	10V
C512	1-137-306-11	FILM CHIP 0.1uF 5%	16V
C513	1-135-149-21	TANTALUM CHIP 2.2uF 20%	10V
C514	1-131-381-00	TANTALUM 47uF 10%	10V
C515	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C516	1-135-149-21	TANTALUM CHIP 2.2uF 20%	10V

< CONNECTOR >

* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	

< DIODE >

D501	8-719-820-65	DIODE TLS221 (TALLY)	
D502	8-719-984-02	LED BR4371F (TALLY)	
D503	8-719-400-20	DIODE MA152WA	

< IC >

IC501	8-759-420-01	IC AN2512S	

< COIL >

L501	1-408-976-21	INDUCTOR 33uH	
L502	1-408-785-21	INDUCTOR CHIP 47uH	
⚠L503	1-459-876-41	COIL, FERRITE (HLC)	

< TRANSISTOR >

Q501	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q502	8-729-216-31	TRANSISTOR 2SA1163-G	
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP	

< RESISTOR >

R501	1-216-033-00	METAL CHIP 220 5%	1/10W
R502	1-216-041-00	METAL CHIP 470 5%	1/10W
R503	1-216-041-00	METAL CHIP 470 5%	1/10W
R506	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R507	1-216-047-00	METAL CHIP 820 5%	1/10W
R508	1-216-689-11	METAL CHIP 39K 0.5%	1/10W
R509	1-216-689-11	METAL CHIP 39K 0.5%	1/10W
R510	1-216-005-00	METAL CHIP 15 5%	1/10W
R511	1-216-121-00	METAL CHIP 1M 5%	1/10W
R512	1-216-131-11	METAL CHIP 2.7M 5%	1/10W
R513	1-216-101-00	METAL CHIP 150K 5%	1/10W
R514	1-216-121-00	METAL CHIP 1M 5%	1/10W
R515	1-216-131-11	METAL CHIP 2.7M 5%	1/10W
R516	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R517	1-216-025-00	METAL CHIP 100 5%	1/10W
R518	1-216-308-00	METAL CHIP 4.7 5%	1/10W
R519	1-216-336-11	METAL CHIP 47K 1%	1/10W
R520	1-216-107-00	METAL CHIP 270K 5%	1/10W
R521	1-216-121-00	METAL CHIP 1M 5%	1/10W
R522	1-216-160-00	METAL GLAZE 27 5%	1/8W

Ref. No.	Part No.	Description	Remarks
R523	1-216-053-00	METAL CHIP 1.5K 5%	1/10W
R524	1-216-113-00	METAL CHIP 470K 5%	1/10W
R525	1-216-097-00	METAL CHIP 100K 5%	1/10W

< VARIABLE RESISTOR >

RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K (H FREQ)	
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470 (V SIZE)	
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K (CONTRAST)	
RV504	1-228-762-00	RES, ADJ, METAL GLAZE 1M (BRIGHTNESS)	

< TRANSFORMER >

⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK	

< THERMISTOR >

TH501	1-809-350-21	THERMISTOR, NTC (2125)	

< FLAT CABLE >

⚠W501	1-540-019-21	SOCKET ASSY, CRT	

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A-7063-813-A VF-68P BOARD, COMPLETE (E,AUS,JE)

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(Ref. No. 13,000 Series)

< CAPACITOR >

C804	1-164-505-11	CERAMIC CHIP 2.2uF	16V
C805	1-135-091-91	TANTAL. CHIP 1uF 20%	16V
C806	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C807	1-164-505-11	CERAMIC CHIP 2.2uF	16V
C808	1-135-145-11	TANTALUM CHIP 0.47uF 10%	35V
C809	1-135-091-91	TANTAL. CHIP 1uF 20%	16V
C810	1-135-091-91	TANTAL. CHIP 1uF 20%	16V
C811	1-135-091-91	TANTAL. CHIP 1uF 20%	16V
C812	1-135-179-21	TANTAL. CHIP 2.2uF 20%	16V
C813	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C814	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C815	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C816	1-164-699-11	CERAMIC CHIP 0.0033uF 5%	50V
C817	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C818	1-162-922-11	CERAMIC CHIP 39PF 5%	50V
C819	1-162-927-11	CERAMIC CHIP 100PF 5%	50V
C820	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V
C821	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C822	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C823	1-164-346-11	CERAMIC CHIP 1uF	16V
C824	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V
C825	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C828	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C829	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C830	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C832	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C833	1-164-361-11	CERAMIC CHIP 0.047uF	16V

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
C834	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C835	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C838	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C840	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C842	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C844	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C845	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C846	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C847	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C848	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C849	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C850	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C851	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C852	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C853	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C863	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C864	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C865	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C866	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C867	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C868	1-164-346-11	CERAMIC CHIP	1uF		16V
C872	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C873	1-164-005-11	CERAMIC CHIP	0.47uF		25V

< CONNECTOR >

Ref. No.	Part No.	Description
CN801	1-573-990-21	CONNECTOR, BOARD TO BOARD 10P
* CN802	1-573-356-11	CONNECTOR, FFC/FPC 16P
* CN803	1-573-351-11	CONNECTOR, FFC/FPC 11P

< DIODE >

Ref. No.	Part No.	Description	
D801	8-719-025-91	DIODE	MA365(E)-TX
D802	8-719-984-02	LED	BR4371F

< IC >

Ref. No.	Part No.	Description	
IC801	8-752-058-96	IC	CXA1585Q-T4
IC802	8-752-058-95	IC	CXA1515Q-T4
IC803	8-752-362-78	IC	CXD2403R-T4

< COIL >

Ref. No.	Part No.	Description
L801	1-414-078-11	INDUCTOR 10uH
L803	1-414-078-11	INDUCTOR 10uH
L805	1-412-960-21	INDUCTOR 56uH
L806	1-412-960-21	INDUCTOR 56uH
L807	1-412-960-21	INDUCTOR 56uH
L808	1-412-950-11	INDUCTOR 8.2uH
L809	1-412-957-11	INDUCTOR 33uH
L810	1-410-192-51	INDUCTOR CHIP 1uH

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q801	8-729-427-74	TRANSISTOR	XP4601
Q802	8-729-425-64	TRANSISTOR	2SD2216Q

< RESISTOR >

Ref. No.	Part No.	Description			Remarks
R801	1-218-958-11	METAL GLAZE	2.7K	5%	1/16W
R802	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R803	1-218-955-11	METAL GLAZE	1.5K	5%	1/16W
R805	1-218-962-11	METAL GLAZE	5.6K	5%	1/16W
R806	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R807	1-218-970-11	METAL GLAZE	27K	5%	1/16W
R808	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R809	1-218-953-11	METAL GLAZE	1K	5%	1/16W
R810	1-218-953-11	METAL GLAZE	1K	5%	1/16W
R811	1-218-953-11	METAL GLAZE	1K	5%	1/16W
R812	1-218-966-11	METAL GLAZE	12K	5%	1/16W
R813	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R814	1-218-989-11	METAL GLAZE	1M	5%	1/16W
R815	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R816	1-218-971-11	METAL GLAZE	33K	5%	1/16W
R817	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R818	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R819	1-218-980-11	METAL GLAZE	180K	5%	1/16W
R820	1-218-970-11	METAL GLAZE	27K	5%	1/16W
R821	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R822	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R823	1-218-971-11	METAL GLAZE	33K	5%	1/16W
R824	1-218-990-11	METAL GLAZE	0	5%	1/16W
R825	1-218-989-11	METAL GLAZE	1M	5%	1/16W
R826	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R827	1-218-971-11	METAL GLAZE	33K	5%	1/16W
R828	1-218-984-11	METAL GLAZE	390K	5%	1/16W
R829	1-218-984-11	METAL GLAZE	390K	5%	1/16W
R830	1-218-984-11	METAL GLAZE	390K	5%	1/16W
R831	1-218-944-11	METAL GLAZE	180	5%	1/16W
R833	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R834	1-218-971-11	METAL GLAZE	33K	5%	1/16W
R835	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R836	1-218-976-11	METAL GLAZE	82K	5%	1/16W
R837	1-218-990-11	METAL GLAZE	0	5%	1/16W
R838	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R839	1-218-990-11	METAL GLAZE	0	5%	1/16W
R840	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R841	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R842	1-218-953-11	METAL GLAZE	1K	5%	1/16W
R843	1-218-971-11	METAL GLAZE	33K	5%	1/16W
R848	1-218-990-11	METAL GLAZE	0	5%	1/16W
R849	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R850	1-218-967-11	METAL GLAZE	15K	5%	1/16W
R855	1-218-969-11	METAL GLAZE	22K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R856	1-218-970-11	METAL GLAZE	27K	5%	1/16W
R861	1-218-873-11	METAL CHIP	12K	0.50%	1/16W
R862	1-218-905-11	METAL CHIP	270K	0.50%	1/16W
R863	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R864	1-218-981-11	METAL GLAZE	220K	5%	1/16W
R865	1-218-953-11	METAL GLAZE	1K	5%	1/16W
R866	1-218-952-11	METAL GLAZE	820	5%	1/16W
R867	1-218-967-11	METAL GLAZE	15K	5%	1/16W
R868	1-218-966-11	METAL GLAZE	12K	5%	1/16W

< VARIABLE RESISTOR >

RV802	1-241-480-11	RES, ADJ, CERMET 47K
RV803	1-241-480-11	RES, ADJ, CERMET 47K
RV804	1-241-480-11	RES, ADJ, CERMET 47K

< VIBRATOR >

X801	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)

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A-7063-814-A VF-69P BOARD, COMPLETE (E,AUS,JE)

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(Ref. No. 12,000 Series)

< CAPACITOR >

C951	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C954	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C955	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C957	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C958	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C959	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C960	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C961	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C963	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C964	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C966	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C969	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C970	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C971	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C972	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C973	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C974	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C975	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C976	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C977	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C978	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C979	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C980	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C981	1-162-923-11	CERAMIC CHIP	47PF	5%	50V

< CONNECTOR >

CN951	1-580-789-21	PIN, CONNECTOR (SMD) 6P
* CN953	1-573-351-11	CONNECTOR, FFC/FPC 11P
* CN955	1-580-267-11	CONNECTOR, BOARD TO BOARD 20P

< DIODE >

D951	8-719-043-70	DIODE	MA6S121-(TX)
D952	8-719-404-19	DIODE	LN1251C
D954	8-719-802-36	DIODE	1SS250
D955	8-719-820-41	DIODE	1SS302
D956	8-719-027-45	DIODE	MA740
D957	8-719-027-45	DIODE	MA740
D958	8-719-420-14	DIODE	MA8082-M
D959	8-719-420-14	DIODE	MA8082-M

< IC >

IC951	8-759-097-75	IC	MB3789PFV-G-BND-ER
IC952	8-759-070-51	IC	SN74HCU04ADB
IC954	8-759-998-98	IC	LM358D

< COIL >

L951	1-414-080-11	INDUCTOR 22uH
L952	1-412-029-11	INDUCTOR CHIP 10uH
L953	1-412-030-11	INDUCTOR CHIP 22uH

< TRANSISTOR >

Q951	8-729-929-24	TRANSISTOR	DTC143TE-TL
Q953	8-729-015-64	TRANSISTOR	MTD9N10ET4
Q954	8-729-928-54	TRANSISTOR	DTA123JE-TL

< RESISTOR >

R951	1-218-971-11	METAL GLAZE	33K	5%	1/16W
R953	1-218-981-11	METAL GLAZE	220K	5%	1/16W
R954	1-218-975-11	METAL GLAZE	68K	5%	1/16W
R957	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R958	1-218-965-11	METAL GLAZE	10K	5%	1/16W
R959	1-218-744-11	METAL CHIP	150K	0.50%	1/16W
R960	1-216-848-11	METAL CHIP	180K	5%	1/16W
R961	1-218-982-11	METAL GLAZE	270K	5%	1/16W
R962	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R963	1-218-970-11	METAL GLAZE	27K	5%	1/16W
R965	1-218-975-11	METAL GLAZE	68K	5%	1/16W
R966	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R967	1-218-903-11	METAL CHIP	220K	0.50%	1/16W
R968	1-218-744-11	METAL CHIP	150K	0.50%	1/16W
R970	1-218-980-11	METAL GLAZE	180K	5%	1/16W
R971	1-218-970-11	METAL GLAZE	27K	5%	1/16W
R973	1-216-833-11	METAL CHIP	10K	5%	1/16W
R974	1-216-849-11	METAL CHIP	220K	5%	1/16W
R975	1-216-846-11	METAL CHIP	120K	5%	1/16W
R978	1-218-969-11	METAL GLAZE	22K	5%	1/16W
R979	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W
R980	1-218-936-11	METAL GLAZE	39	5%	1/16W
R981	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R982	1-216-834-11	METAL CHIP	12K	5%	1/16W
R983	1-216-835-11	METAL CHIP	15K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R984	1-216-835-11	METAL CHIP	15K	5%	1/16W
R987	1-216-295-00	METAL CHIP	0	5%	1/10W
R991	1-216-296-00	METAL CHIP	0	5%	1/8W
R997	1-218-973-11	METAL GLAZE	47K	5%	1/16W
R998	1-218-977-11	METAL GLAZE	100K	5%	1/16W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description			Remarks
RV951	1-241-480-11	RES, ADJ, CERMET	47K		(BRIGHTNESS)
RV953	1-230-523-11	RES, ADJ, METAL	10K		(COLOR)
RV954	1-230-523-11	RES, ADJ, METAL	10K		(HUE)

< TRANSFORMER >

Ref. No.	Part No.	Description			Remarks
T951	1-423-813-11	TRANSFORMER, INVERTER			

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A-7063-875-A VS-99 BOARD, COMPLETE (AEP, UK)

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A-7063-972-A VS-99 BOARD, COMPLETE (E, AUS, JE)

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(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C002	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C003	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C004	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C005	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C006	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C007	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C009	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C010	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C020	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C021	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C023	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C024	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C025	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C026	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C027	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C029	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C030	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C032	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C035	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C036	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C037	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C038	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C039	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C040	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C041	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C043	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C044	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C046	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C047	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C048	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C049	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C050	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C051	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C052	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C053	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C054	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C055	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C056	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C057	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C058	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C059	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C060	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C061	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C062	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C063	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C064	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C065	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C066	1-162-976-11	CERAMIC CHIP	75PF	5%	50V
C072	1-165-112-11	CERAMIC CHIP	0.33uF		16V(E, AUS, JE)
C073	1-164-360-11	CERAMIC CHIP	0.1uF		16V(E, AUS, JE)
C074	1-164-360-11	CERAMIC CHIP	0.1uF		16V(E, AUS, JE)
C075	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V(E, AUS, JE)
C080	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C082	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C083	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C085	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C086	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C087	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C088	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C089	1-126-246-11	ELECT CHIP	220uF	20%	4V
C090	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C091	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C093	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C094	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C095	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C096	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C098	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C099	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C100	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C101	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C102	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C103	1-162-962-11	CERAMIC CHIP	470PF	10%	50V(E, AUS, JE)
C104	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C121	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C122	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C123	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C126	1-162-934-11	CERAMIC CHIP	3PF	0.25PF	50V
C128	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C130	1-162-942-11	CERAMIC CHIP	12PF	5%	50V

VS-99

Ref. No.	Part No.	Description		Remarks
C131	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C133	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C134	1-164-227-11	CERAMIC CHIP	0.022uF	10% 25V
C137	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C138	1-162-943-11	CERAMIC CHIP	15PF	5% 50V
C139	1-162-947-11	CERAMIC CHIP	33PF	5% 50V
C140	1-162-958-11	CERAMIC CHIP	270PF	5% 50V
C142	1-162-943-11	CERAMIC CHIP	15PF	5% 50V
C145	1-162-945-11	CERAMIC CHIP	22PF	5% 50V
C146	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C147	1-162-949-11	CERAMIC CHIP	47PF	5% 50V
C148	1-162-928-11	CERAMIC CHIP	120PF	5% 50V
C149	1-162-919-11	CERAMIC CHIP	22PF	5% 50V
C150	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C151	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V
C152	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C153	1-164-227-11	CERAMIC CHIP	0.022uF	10% 25V
C154	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C155	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C156	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C157	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C158	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C160	1-164-238-11	CERAMIC CHIP	36PF	5% 50V
C163	1-162-949-11	CERAMIC CHIP	47PF	5% 50V
C164	1-162-966-11	CERAMIC CHIP	0.0022uF	10% 50V
C165	1-162-920-11	CERAMIC CHIP	27PF	5% 50V
C166	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V
C167	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C168	1-164-238-11	CERAMIC CHIP	36PF	5% 50V
C169	1-162-951-11	CERAMIC CHIP	68PF	5% 50V
C170	1-162-958-11	CERAMIC CHIP	270PF	5% 50V
C171	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C174	1-162-951-11	CERAMIC CHIP	68PF	5% 50V
C175	1-164-227-11	CERAMIC CHIP	0.022uF	10% 25V
C176	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C177	1-162-947-11	CERAMIC CHIP	33PF	5% 50V
C178	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V
C179	1-162-920-11	CERAMIC CHIP	27PF	5% 50V
C180	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C181	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C182	1-162-928-11	CERAMIC CHIP	120PF	5% 50V
C183	1-164-227-11	CERAMIC CHIP	0.022uF	10% 25V
C184	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C185	1-162-945-11	CERAMIC CHIP	22PF	5% 50V
C187	1-162-941-11	CERAMIC CHIP	10PF	0.5PF 50V
C189	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C190	1-162-938-11	CERAMIC CHIP	7PF	0.5PF 50V
C191	1-162-944-11	CERAMIC CHIP	18PF	5% 50V
C192	1-162-938-11	CERAMIC CHIP	7PF	0.5PF 50V
C193	1-164-361-11	CERAMIC CHIP	0.047uF	16V

Ref. No.	Part No.	Description		Remarks
C194	1-162-934-11	CERAMIC CHIP	3PF	0.25PF 50V
C196	1-164-145-11	CERAMIC CHIP	390PF	5% 50V
C197	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C200	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C201	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C230	1-162-915-11	CERAMIC CHIP	10PF	0.5PF 50V
C231	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C233	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C234	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C235	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C236	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C237	1-126-246-11	ELECT CHIP	220uF	20% 4V
C238	1-164-361-11	CERAMIC CHIP	0.047uF	16V
C239	1-135-145-11	TANTALUM CHIP	0.47uF	10% 35V
C240	1-164-005-11	CERAMIC CHIP	0.47uF	25V
C241	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C242	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V
C244	1-164-005-11	CERAMIC CHIP	0.47uF	25V
C245	1-164-182-11	CERAMIC CHIP	0.0033uF	10% 50V
C246	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C247	1-162-967-11	CERAMIC CHIP	0.0033uF	10% 50V
C248	1-164-360-11	CERAMIC CHIP	0.1uF	16V
C249	1-162-956-11	CERAMIC CHIP	180PF	5% 50V
C250	1-164-005-11	CERAMIC CHIP	0.47uF	25V
C251	1-164-471-11	CERAMIC CHIP	680PF	5% 50V
C252	1-162-947-11	CERAMIC CHIP	33PF	5% 50V
C253	1-164-634-11	CERAMIC CHIP	1uF	16V
C254	1-126-205-11	ELECT CHIP	47uF	20% 6.3V
C255	1-135-151-21	TANTALUM CHIP	4.7uF	20% 4V
C256	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C257	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V
C258	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C259	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C260	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C261	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V
C262	1-163-038-00	CERAMIC CHIP	0.1uF	25V
C263	1-162-924-11	CERAMIC CHIP	56PF	5% 50V
C264	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C265	1-162-957-11	CERAMIC CHIP	220PF	5% 50V
C266	1-162-959-11	CERAMIC CHIP	330PF	5% 50V
C267	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C268	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C269	1-162-958-11	CERAMIC CHIP	270PF	5% 50V
C270	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V
C271	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C272	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C275	1-162-974-11	CERAMIC CHIP	0.01uF	50V
C276	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V
C277	1-162-949-11	CERAMIC CHIP	47PF	5% 50V
C278	1-162-974-11	CERAMIC CHIP	0.01uF	50V

Ref. No.	Part No.	Description	Remarks
C279	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C280	1-162-948-11	CERAMIC CHIP 39PF 5% 50V	
C281	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C282	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C283	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C284	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C285	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C286	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C287	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C288	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C290	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C291	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C292	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C293	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C294	1-164-392-11	CERAMIC CHIP 390PF 5% 50V	
C295	1-162-952-11	CERAMIC CHIP 82PF 5% 50V	
C296	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C297	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C298	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C299	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C300	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C301	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C302	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C303	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C304	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C305	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	
C306	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C307	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C308	1-164-634-11	CERAMIC CHIP 1uF 16V	
C309	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C310	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C311	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C312	1-162-942-11	CERAMIC CHIP 12PF 5% 50V	
C313	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C314	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C315	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C316	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C317	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C318	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	
C320	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C323	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C324	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C325	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	
C326	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C327	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C328	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
C330	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C331	1-162-947-11	CERAMIC CHIP 33PF 5% 50V	
C332	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C333	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C334	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C335	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C336	1-162-956-11	CERAMIC CHIP 180PF 5% 50V	
C338	1-162-950-11	CERAMIC CHIP 56PF 5% 50V	
C340	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C342	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C343	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C344	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C346	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C348	1-162-936-11	CERAMIC CHIP 5PF 0.25PF 50V	
C350	1-162-951-11	CERAMIC CHIP 68PF 5% 50V	
C351	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C352	1-162-950-11	CERAMIC CHIP 56PF 5% 50V	
C354	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C355	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C356	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C357	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C358	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C360	1-164-383-11	CERAMIC CHIP 110PF 5% 50V	
C361	1-162-918-11	CERAMIC CHIP 18PF 5% 50V	
C362	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C363	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C364	1-135-179-21	TANTAL. CHIP 2.2uF 20% 16V	
C365	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C366	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C367	1-164-634-11	CERAMIC CHIP 1uF 16V	
C368	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	
C369	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C370	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C371	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C372	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C373	1-162-952-11	CERAMIC CHIP 82PF 5% 50V	
C374	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C375	1-164-145-11	CERAMIC CHIP 390PF 5% 50V	
C376	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C378	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C379	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C380	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C383	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C384	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C386	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C388	1-162-947-11	CERAMIC CHIP 33PF 5% 50V	
C389	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C390	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C391	1-162-941-11	CERAMIC CHIP 10PF 0.5PF 50V	
C392	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C393	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C394	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C395	1-135-176-21	TANTALUM CHIP 0.68uF 10% 20V	
C396	1-162-947-11	CERAMIC CHIP 33PF 5% 50V	

Ref. No.	Part No.	Description				Remarks
C397	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C502	1-128-530-11	ELECT CHIP	33uF	20%	10V	
C503	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C504	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C506	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C507	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C508	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C509	1-162-937-11	CERAMIC CHIP	6PF	0.5PF	50V	
C511	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	
C512	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V	
C513	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V	
C514	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V	
C515	1-162-942-11	CERAMIC CHIP	12PF	5%	50V	
C516	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C517	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C518	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C519	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C520	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C522	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C523	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C524	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C525	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C526	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C527	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C528	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C529	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C530	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C532	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	
C533	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C534	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C535	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C536	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C537	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C538	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C539	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C540	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C541	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C542	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C543	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C544	1-164-471-11	CERAMIC CHIP	680PF	5%	50V	
C545	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C546	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C548	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C549	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C550	1-165-128-11	CERAMIC CHIP	0.22uF		16V	
C551	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C552	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C553	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C554	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C555	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C556	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C557	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C558	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C559	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V	
C560	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C561	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C563	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C564	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C565	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C566	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C576	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C577	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C578	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C579	1-164-315-11	CERAMIC CHIP	470PF	5%	50V	
C580	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C581	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C582	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C583	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C584	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C585	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	
C587	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C588	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C589	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C590	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C591	1-164-634-11	CERAMIC CHIP	1uF		16V	
C592	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C593	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C594	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C595	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C596	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C597	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C598	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C599	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C998	1-162-942-11	CERAMIC CHIP	12PF	5%	50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN002	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN101	1-691-492-21	CONNECTOR, FFC/FPC 13P	
CN501	1-691-540-11	CONNECTOR, BOARD TO BOARD 40P	
CN502	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN504	1-691-928-11	CONNECTOR, BOARD TO BOARD 32P	
* CN505	1-691-935-11	CONNECTOR, BOARD TO BOARD 38P	

< DIODE >

Ref. No.	Part No.	Description		Remarks
D070	8-719-404-35	DIODE	MA141WK	
D071	8-719-404-46	DIODE	MA110	
D120	8-719-800-76	DIODE	1SS226	
D121	8-719-404-46	DIODE	MA110	
D123	8-719-404-46	DIODE	MA110	

Ref. No.	Part No.	Description	Remarks
D232	8-719-404-35	DIODE MA141WK	
D235	8-719-404-35	DIODE MA141WK	
D236	8-719-404-35	DIODE MA141WK	
D237	8-719-820-05	DIODE 1SS181	
D238	8-719-404-46	DIODE MA110	
D239	8-719-820-05	DIODE 1SS181	
D241	8-719-404-46	DIODE MA110	
D242	8-719-404-46	DIODE MA110	
D243	8-719-404-46	DIODE MA110	
D244	8-719-404-46	DIODE MA110	
D245	8-719-404-35	DIODE MA141WK	
D246	8-719-404-46	DIODE MA110	
D504	8-719-404-46	DIODE MA110	
D505	8-719-027-50	DIODE MA142WK-(TX)	
		< FILTER >	
FL161	1-236-848-21	FILTER, LOW PASS	
FL162	1-239-010-11	FILTER, LOW PASS (CCD. PAL. Y)	
FL201	1-239-112-21	FILTER, LOW PASS (Y)	
FL202	1-236-775-11	FILTER, LOW PASS (DEM)	
FL301	1-239-110-11	FILTER, BAND PASS	
FL302	1-236-186-11	FILTER, BAND PASS	
FL303	1-579-371-11	FILTER, CERAMIC	
FL371	1-236-850-21	FILTER, BAND PASS	
		< IC >	
IC001	8-759-173-71	IC CXA1555CR-E2	
IC003	8-759-064-36	IC MB88346BPFV	
IC004	8-759-710-29	IC NJM2235M (E, AUS, JE)	
IC005	8-759-064-36	IC MB88346BPFV	
IC006	8-759-170-69	IC MC13400VMER	
IC007	8-759-061-70	IC MB86168PFV-ER	
IC101	8-752-058-02	IC CXA1509AR	
IC102	8-759-070-51	IC SN74HCU04ADB	
IC171	8-759-605-61	IC CXA1203N	
IC201	8-752-065-54	IC CXA1207AR-T6	
IC202	8-759-636-33	IC CXA1452N	
IC203	8-752-053-21	IC CXA1211M	
IC301	8-752-051-40	IC CXA1208R-T4	
IC302	8-752-053-21	IC CXA1211M	
IC501	8-752-851-40	IC CXP80624A-034R	
IC502	8-759-169-11	IC CXA1575M-E2	
IC503	8-759-062-02	IC MPC1720VM-EL	
IC504	8-759-059-42	IC CXA1481AR-E2	
IC520	8-752-010-20	IC CX20102	
IC521	8-759-061-72	IC CXD2120R-T4	
IC551	8-752-351-95	IC CXL1506N-T4	
IC552	8-752-351-95	IC CXL1506N-T4	

Ref. No.	Part No.	Description	Remarks
		< COIL >	
L001	1-412-033-11	INDUCTOR CHIP 220uH	
L002	1-410-381-11	INDUCTOR CHIP 10uH	
L004	1-410-385-11	INDUCTOR CHIP 22uH	
L005	1-412-032-11	INDUCTOR CHIP 100uH	
L006	1-412-032-11	INDUCTOR CHIP 100uH	
L007	1-412-032-11	INDUCTOR CHIP 100uH	
L008	1-410-385-11	INDUCTOR CHIP 22uH	
L012	1-412-029-11	INDUCTOR CHIP 10uH	
L013	1-410-379-31	INDUCTOR CHIP 6. 8uH	
L023	1-412-029-11	INDUCTOR CHIP 10uH	
L024	1-412-029-11	INDUCTOR CHIP 10uH	
L025	1-412-029-11	INDUCTOR CHIP 10uH	
L101	1-412-282-41	INDUCTOR 470uH	
L102	1-410-657-21	INDUCTOR CHIP 180uH	
L103	1-412-958-21	INDUCTOR 39uH	
L104	1-410-382-31	INDUCTOR CHIP 12uH	
L105	1-412-029-11	INDUCTOR CHIP 10uH	
L106	1-412-961-11	INDUCTOR 68uH	
L109	1-410-384-31	INDUCTOR CHIP 18uH	
L110	1-410-376-21	INDUCTOR CHIP 3. 9uH	
L113	1-412-954-11	INDUCTOR 18uH	
L114	1-412-954-11	INDUCTOR 18uH	
L116	1-412-029-11	INDUCTOR CHIP 10uH	
L117	1-410-655-31	INDUCTOR CHIP 120uH	
L118	1-410-377-31	INDUCTOR CHIP 4. 7uH	
L119	1-412-947-11	INDUCTOR 4. 7uH	
L120	1-412-280-31	INDUCTOR 330uH	
L121	1-410-387-11	INDUCTOR CHIP 33uH	
L164	1-412-957-11	INDUCTOR 33uH	
L201	1-410-393-11	INDUCTOR CHIP 100uH	
L202	1-412-029-11	INDUCTOR CHIP 10uH	
L204	1-410-383-31	INDUCTOR CHIP 15uH	
L205	1-410-390-11	INDUCTOR CHIP 56uH	
L207	1-410-380-31	INDUCTOR CHIP 8. 2uH	
L210	1-410-386-11	INDUCTOR CHIP 27uH	
L211	1-410-376-21	INDUCTOR CHIP 3. 9uH	
L212	1-412-956-21	INDUCTOR 27uH	
L213	1-410-382-31	INDUCTOR CHIP 12uH	
L214	1-410-390-11	INDUCTOR CHIP 56uH	
L301	1-412-029-11	INDUCTOR CHIP 10uH	
L302	1-410-393-11	INDUCTOR CHIP 100uH	
L303	1-410-656-11	INDUCTOR CHIP 150uH	
L304	1-410-393-11	INDUCTOR CHIP 100uH	
L305	1-410-655-31	INDUCTOR CHIP 120uH	
L307	1-410-386-11	INDUCTOR CHIP 27uH	
L308	1-410-393-11	INDUCTOR CHIP 100uH	
L309	1-410-655-31	INDUCTOR CHIP 120uH	
L371	1-412-029-11	INDUCTOR CHIP 10uH	
L406	1-410-657-21	INDUCTOR CHIP 180uH	
L407	1-410-387-11	INDUCTOR CHIP 33uH	

Ref. No.	Part No.	Description	Remarks
L409	1-410-381-11	INDUCTOR CHIP 10uH	
L502	1-412-029-11	INDUCTOR CHIP 10uH	
L503	1-410-381-11	INDUCTOR CHIP 10uH	
L504	1-410-381-11	INDUCTOR CHIP 10uH	
L505	1-410-381-11	INDUCTOR CHIP 10uH	
L520	1-412-029-11	INDUCTOR CHIP 10uH	
L521	1-410-658-31	INDUCTOR CHIP 220uH	
L522	1-412-029-11	INDUCTOR CHIP 10uH	
L990	1-412-026-11	INDUCTOR CHIP 1uH	
		< IC LINK >	
⚠PS501	1-576-123-21	RINK, IC	
		< TRANSISTOR >	
Q001	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q002	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q003	8-729-216-22	TRANSISTOR 2SA1162	
Q007	8-729-015-66	TRANSISTOR 2SC4919-TL	
Q008	8-729-015-66	TRANSISTOR 2SC4919-TL	
Q012	8-729-428-88	TRANSISTOR UN9113	
Q013	8-729-428-88	TRANSISTOR UN9113	
Q014	8-729-427-72	TRANSISTOR XP4501	
Q016	8-729-429-50	TRANSISTOR XP4312	
Q017	8-729-402-42	TRANSISTOR UN5213	
Q021	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q022	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q023	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q024	8-729-402-42	TRANSISTOR UN5213	
Q025	8-729-402-42	TRANSISTOR UN5213	
Q026	8-729-402-42	TRANSISTOR UN5213	
Q027	8-729-402-42	TRANSISTOR UN5213	
Q072	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q073	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(E, AUS, JE)
Q074	8-729-402-42	TRANSISTOR UN5213	(E, AUS, JE)
Q075	8-729-025-16	TRANSISTOR UN511D-TX	
Q076	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q078	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q079	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q080	8-729-101-07	TRANSISTOR 2SB798-DL	
Q120	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q121	8-729-420-12	TRANSISTOR XN4213	
Q124	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q125	8-729-428-88	TRANSISTOR UN9113	
Q127	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q128	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q132	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q135	8-729-402-42	TRANSISTOR UN5213	
Q136	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q137	8-729-402-42	TRANSISTOR UN5213	

Ref. No.	Part No.	Description	Remarks
Q138	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q140	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q142	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q144	8-729-402-42	TRANSISTOR UN5213	
Q146	8-729-425-64	TRANSISTOR 2SD2216Q	
Q147	8-729-402-42	TRANSISTOR UN5213	
Q148	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q149	8-729-402-42	TRANSISTOR UN5213	
Q150	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q230	8-729-824-05	TRANSISTOR 3SK248	
Q232	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q233	8-729-402-42	TRANSISTOR UN5213	
Q234	8-729-402-42	TRANSISTOR UN5213	
Q235	8-729-402-42	TRANSISTOR UN5213	
Q236	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q239	8-729-420-12	TRANSISTOR XN4213	
Q240	8-729-425-73	TRANSISTOR 2SC4627-C(TXE)	
Q241	8-729-402-42	TRANSISTOR UN5213	
Q242	8-729-402-42	TRANSISTOR UN5213	
Q243	8-729-403-35	TRANSISTOR UN5113	
Q244	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q245	8-729-402-42	TRANSISTOR UN5213	
Q246	8-729-425-73	TRANSISTOR 2SC4627-C(TXE)	
Q247	8-729-402-81	TRANSISTOR XN4501	
Q248	8-729-420-20	TRANSISTOR XN4312	
Q249	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q250	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q251	8-729-403-35	TRANSISTOR UN5113	
Q252	8-729-428-88	TRANSISTOR UN9113	
Q254	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q255	8-729-425-73	TRANSISTOR 2SC4627-C(TXE)	
Q256	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q257	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q258	8-729-425-50	TRANSISTOR 2SB1462Q	
Q259	8-729-015-74	TRANSISTOR UN5111-TX	
Q260	8-729-402-42	TRANSISTOR UN5213	
Q261	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	
Q262	8-729-403-06	TRANSISTOR XN1113	
Q263	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	
Q264	8-729-428-88	TRANSISTOR UN9113	
Q265	8-729-402-42	TRANSISTOR UN5213	
Q266	8-729-402-42	TRANSISTOR UN5213	
Q267	8-729-402-42	TRANSISTOR UN5213	
Q268	8-729-402-42	TRANSISTOR UN5213	
Q269	8-729-402-42	TRANSISTOR UN5213	
Q270	8-729-015-70	TRANSISTOR 2SA1865-TL	
Q271	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q273	8-729-402-42	TRANSISTOR UN5213	
Q275	8-729-427-72	TRANSISTOR XP4501	
Q276	8-729-117-73	TRANSISTOR 2SC4178-F14	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks
Q280	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q281	8-729-421-90	TRANSISTOR XN4113	
Q282	8-729-429-18	TRANSISTOR UN9213	
Q283	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q285	8-729-403-35	TRANSISTOR UN5113	
Q286	8-729-402-42	TRANSISTOR UN5213	
Q287	8-729-402-42	TRANSISTOR UN5213	
Q289	8-729-402-42	TRANSISTOR UN5213	
Q290	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q291	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q292	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q293	8-729-402-42	TRANSISTOR UN5213	
Q294	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q295	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q296	8-729-402-42	TRANSISTOR UN5213	
Q297	8-729-403-35	TRANSISTOR UN5113	
Q298	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q299	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q301	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q302	8-729-403-35	TRANSISTOR UN5113	
Q303	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q305	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q307	8-729-402-42	TRANSISTOR UN5213	
Q308	8-729-403-35	TRANSISTOR UN5113	
Q501	8-729-420-12	TRANSISTOR XN4213	
Q502	8-729-421-90	TRANSISTOR XN4113	
Q503	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q511	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q513	8-729-017-67	TRANSISTOR 2SB1574-(TX)	
Q514	8-729-403-35	TRANSISTOR UN5113	
Q520	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q521	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q522	8-729-403-35	TRANSISTOR UN5113	
Q523	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q524	8-729-427-74	TRANSISTOR XP4601	
Q525	8-729-429-18	TRANSISTOR UN9213	
Q905	8-729-230-63	TRANSISTOR 2SC4116-YG	

< RESISTOR >

Ref. No.	Part No.	Description	Remarks
R001	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R002	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R003	1-216-814-11	METAL CHIP 270 5% 1/16W	
R004	1-216-813-11	METAL CHIP 220 5% 1/16W	
R005	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R006	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R007	1-216-805-11	METAL CHIP 47 5% 1/16W	
R008	1-216-804-11	METAL CHIP 39 5% 1/16W	
R009	1-216-818-11	METAL CHIP 560 5% 1/16W	
R010	1-216-864-11	METAL CHIP 0 5% 1/16W	
R012	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R013	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R015	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R017	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R018	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R019	1-216-809-11	METAL CHIP 100 5% 1/16W	
R020	1-216-809-11	METAL CHIP 100 5% 1/16W	
R021	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R022	1-216-820-11	METAL CHIP 820 5% 1/16W	
R023	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R024	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R025	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R026	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R027	1-216-809-11	METAL CHIP 100 5% 1/16W	
R028	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R029	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R030	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R031	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R032	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R033	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R035	1-218-679-11	METAL CHIP 300 0.50% 1/16W	
R036	1-216-815-11	METAL CHIP 330 5% 1/16W	
R037	1-216-864-11	METAL CHIP 0 5% 1/16W	
R039	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R040	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R041	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R042	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R043	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R044	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R045	1-216-816-11	METAL CHIP 390 5% 1/16W	
R046	1-216-817-11	METAL CHIP 470 5% 1/16W	
R048	1-216-819-11	METAL CHIP 680 5% 1/16W	
R049	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R050	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R051	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R052	1-216-819-11	METAL CHIP 680 5% 1/16W	
R053	1-216-819-11	METAL CHIP 680 5% 1/16W	
R054	1-216-809-11	METAL CHIP 100 5% 1/16W	
R055	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R056	1-216-864-11	METAL CHIP 0 5% 1/16W	
R057	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R064	1-216-864-11	METAL CHIP 0 5% 1/16W	
R069	1-216-856-11	METAL CHIP 820K 5% 1/16W	
R072	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R077	1-216-864-11	METAL CHIP 0 5% 1/16W	
R078	1-216-864-11	METAL CHIP 0 5% 1/16W	
R080	1-216-818-11	METAL CHIP 560 5% 1/16W	
R081	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R085	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R087	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description				Remarks
R089	1-216-803-11	METAL CHIP	33	5%	1/16W	
R090	1-216-804-11	METAL CHIP	39	5%	1/16W	
R091	1-216-803-11	METAL CHIP	33	5%	1/16W	
R092	1-216-804-11	METAL CHIP	39	5%	1/16W	
R093	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R094	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R095	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	(E, AUS, JE)
R096	1-216-820-11	METAL CHIP	820	5%	1/16W	(E, AUS, JE)
R097	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R098	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R099	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R100	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R101	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R102	1-216-817-11	METAL CHIP	470	5%	1/16W	
R103	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R105	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R106	1-216-820-11	METAL CHIP	820	5%	1/16W	
R107	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R108	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R109	1-216-304-11	METAL CHIP	3.3	5%	1/10W	
R113	1-216-840-11	METAL CHIP	39K	5%	1/16W	(E, AUS, JE)
R114	1-216-839-11	METAL CHIP	33K	5%	1/16W	(E, AUS, JE)
R115	1-216-840-11	METAL CHIP	39K	5%	1/16W	(E, AUS, JE)
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W	(E, AUS, JE)
R117	1-216-864-11	METAL CHIP	0	5%	1/16W	(AEP, UK)
R119	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R120	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R122	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R124	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R125	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R130	1-216-817-11	METAL CHIP	470	5%	1/16W	
R131	1-216-805-11	METAL CHIP	47	5%	1/16W	
R132	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R133	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R135	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R137	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R138	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R139	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R144	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R145	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R146	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R148	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R149	1-216-804-11	METAL CHIP	39	5%	1/16W	
R153	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R154	1-216-847-11	METAL CHIP	150K	5%	1/16W	(E, AUS, JE)
R155	1-216-819-11	METAL CHIP	680	5%	1/16W	
R156	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R158	1-216-817-11	METAL CHIP	470	5%	1/16W	

Ref. No.	Part No.	Description				Remarks
R160	1-216-817-11	METAL CHIP	470	5%	1/16W	
R161	1-216-864-11	METAL CHIP	0	5%	1/16W	
R162	1-216-296-00	METAL CHIP	0	5%	1/8W	
R163	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R164	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R165	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R166	1-216-814-11	METAL CHIP	270	5%	1/16W	
R170	1-216-813-11	METAL CHIP	220	5%	1/16W	
R171	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R172	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R176	1-216-818-11	METAL CHIP	560	5%	1/16W	
R177	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R178	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R180	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R181	1-216-813-11	METAL CHIP	220	5%	1/16W	
R182	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R183	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R187	1-216-820-11	METAL CHIP	820	5%	1/16W	
R188	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R191	1-216-817-11	METAL CHIP	470	5%	1/16W	
R192	1-216-817-11	METAL CHIP	470	5%	1/16W	
R195	1-216-864-11	METAL CHIP	0	5%	1/16W	
R196	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R199	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R201	1-216-816-11	METAL CHIP	390	5%	1/16W	
R203	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R205	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R206	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R208	1-216-820-11	METAL CHIP	820	5%	1/16W	
R209	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R210	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R211	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R212	1-216-864-11	METAL CHIP	0	5%	1/16W	
R214	1-216-820-11	METAL CHIP	820	5%	1/16W	
R215	1-216-814-11	METAL CHIP	270	5%	1/16W	
R216	1-216-820-11	METAL CHIP	820	5%	1/16W	
R217	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R218	1-216-813-11	METAL CHIP	220	5%	1/16W	
R219	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R221	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R230	1-216-817-11	METAL CHIP	470	5%	1/16W	
R232	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R233	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R234	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R235	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R236	1-216-296-00	METAL CHIP	0	5%	1/8W	
R237	1-216-817-11	METAL CHIP	470	5%	1/16W	
R238	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R241	1-216-804-11	METAL CHIP	39	5%	1/16W	
R242	1-216-818-11	METAL CHIP	560	5%	1/16W	

Ref. No.	Part No.	Description	Remarks
R244	1-216-820-11	METAL CHIP 820 5% 1/16W	
R245	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R246	1-216-803-11	METAL CHIP 33 5% 1/16W	
R248	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R249	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R250	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R251	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R253	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R254	1-216-818-11	METAL CHIP 560 5% 1/16W	
R255	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R256	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R257	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R258	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R259	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R260	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R261	1-216-864-11	METAL CHIP 0 5% 1/16W	
R262	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R264	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R265	1-216-820-11	METAL CHIP 820 5% 1/16W	
R266	1-216-819-11	METAL CHIP 680 5% 1/16W	
R267	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R268	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R269	1-216-818-11	METAL CHIP 560 5% 1/16W	
R270	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R273	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R274	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R276	1-216-864-11	METAL CHIP 0 5% 1/16W	
R277	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R278	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R279	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R280	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R281	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R282	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R283	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R283	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R284	1-216-864-11	METAL CHIP 0 5% 1/16W	
R285	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R287	1-216-864-11	METAL CHIP 0 5% 1/16W	
R288	1-216-810-11	METAL CHIP 120 5% 1/16W	
R289	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R290	1-218-732-11	METAL CHIP 47K 0.50% 1/16W	
R293	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R294	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R295	1-216-864-11	METAL CHIP 0 5% 1/16W	
R296	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R297	1-216-813-11	METAL CHIP 220 5% 1/16W	
R298	1-216-813-11	METAL CHIP 220 5% 1/16W	
R299	1-216-814-11	METAL CHIP 270 5% 1/16W	
R301	1-216-816-11	METAL CHIP 390 5% 1/16W	
R302	1-216-841-11	METAL CHIP 47K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
R303	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R304	1-216-864-11	METAL CHIP 0 5% 1/16W	
R305	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R306	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R307	1-216-864-11	METAL CHIP 0 5% 1/16W	
R308	1-216-818-11	METAL CHIP 560 5% 1/16W	
R309	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R310	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R311	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R312	1-218-694-11	METAL CHIP 1.2K 0.50% 1/16W	
R314	1-216-817-11	METAL CHIP 470 5% 1/16W	
R315	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R316	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R317	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R318	1-216-814-11	METAL CHIP 270 5% 1/16W	
R319	1-216-819-11	METAL CHIP 680 5% 1/16W	
R320	1-216-815-11	METAL CHIP 330 5% 1/16W	
R321	1-218-732-11	METAL CHIP 47K 0.50% 1/16W	
R323	1-218-720-11	METAL CHIP 15K 0.50% 1/16W	
R323	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R324	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R325	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R326	1-216-813-11	METAL CHIP 220 5% 1/16W	
R327	1-218-704-11	METAL CHIP 3.3K 0.50% 1/16W	
R328	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R329	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R330	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R331	1-216-819-11	METAL CHIP 680 5% 1/16W	
R332	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R333	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R334	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R335	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R336	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R337	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R338	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R339	1-218-684-91	METAL CHIP 470 0.50% 1/16W	
R340	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R341	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R342	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R344	1-216-816-11	METAL CHIP 390 5% 1/16W	
R345	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R346	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R347	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R348	1-216-810-11	METAL CHIP 120 5% 1/16W	
R349	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R351	1-216-864-11	METAL CHIP 0 5% 1/16W	
R352	1-216-864-11	METAL CHIP 0 5% 1/16W	
R354	1-216-819-11	METAL CHIP 680 5% 1/16W	
R355	1-216-864-11	METAL CHIP 0 5% 1/16W	
R356	1-216-837-11	METAL CHIP 22K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
R358	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R361	1-216-808-11	METAL CHIP 82 5% 1/16W	
R362	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R363	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R366	1-216-819-11	METAL CHIP 680 5% 1/16W	
R367	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R368	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R369	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R370	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R371	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R372	1-216-817-11	METAL CHIP 470 5% 1/16W	
R376	1-216-810-11	METAL CHIP 120 5% 1/16W	
R377	1-216-817-11	METAL CHIP 470 5% 1/16W	
R378	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R379	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R380	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R382	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R383	1-216-814-11	METAL CHIP 270 5% 1/16W	
R384	1-216-813-11	METAL CHIP 220 5% 1/16W	
R385	1-216-864-11	METAL CHIP 0 5% 1/16W	
R386	1-216-813-11	METAL CHIP 220 5% 1/16W	
R389	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R390	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R395	1-216-864-11	METAL CHIP 0 5% 1/16W	
R396	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R397	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R399	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R400	1-216-819-11	METAL CHIP 680 5% 1/16W	
R401	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R402	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R403	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R404	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R405	1-216-819-11	METAL CHIP 680 5% 1/16W	
R406	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R407	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R408	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R409	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R410	1-216-817-11	METAL CHIP 470 5% 1/16W	
R413	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R415	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R418	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R419	1-216-864-11	METAL CHIP 0 5% 1/16W	
R420	1-216-864-11	METAL CHIP 0 5% 1/16W	
R421	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R422	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R423	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R424	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R428	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R429	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R430	1-216-845-11	METAL CHIP 100K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
R432	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R433	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R434	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R435	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R438	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R439	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R440	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R441	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R442	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R443	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R444	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R445	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R446	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R447	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R448	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R449	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R450	1-216-818-11	METAL CHIP 560 5% 1/16W	
R452	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R453	1-218-740-11	METAL CHIP 100K 0.50% 1/16W	
R454	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R455	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R456	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R458	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R459	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R460	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R461	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R462	1-216-816-11	METAL CHIP 390 5% 1/16W	
R463	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R464	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R465	1-216-864-11	METAL CHIP 0 5% 1/16W	
R466	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R467	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R468	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R469	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R470	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R473	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R475	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R476	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R477	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R478	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R479	1-216-817-11	METAL CHIP 470 5% 1/16W	
R480	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R481	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R489	1-216-809-11	METAL CHIP 100 5% 1/16W	
R490	1-216-809-11	METAL CHIP 100 5% 1/16W	
R491	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R493	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R494	1-216-809-11	METAL CHIP 100 5% 1/16W	
R495	1-216-809-11	METAL CHIP 100 5% 1/16W	
R498	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
R499	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R500	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R502	1-216-819-11	METAL CHIP 680 5% 1/16W	
R503	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R504	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R505	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R506	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R507	1-216-819-11	METAL CHIP 680 5% 1/16W	
R511	1-216-819-11	METAL CHIP 680 5% 1/16W	
R512	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R513	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R514	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R515	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R516	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R517	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R518	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R519	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R521	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R522	1-216-864-11	METAL CHIP 0 5% 1/16W	
R523	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R524	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R525	1-216-809-11	METAL CHIP 100 5% 1/16W	
R526	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R528	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R530	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R531	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R532	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R533	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R534	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R535	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R536	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R537	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R538	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R539	1-216-817-11	METAL CHIP 470 5% 1/16W	
R540	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R541	1-216-817-11	METAL CHIP 470 5% 1/16W	
R542	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R543	1-216-819-11	METAL CHIP 680 5% 1/16W	
R546	1-216-817-11	METAL CHIP 470 5% 1/16W	
R547	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R548	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R552	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R553	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R554	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R555	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R556	1-216-019-00	METAL CHIP 56 5% 1/10W	
R557	1-216-817-11	METAL CHIP 470 5% 1/16W	
R558	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R559	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R560	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R561	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R562	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R563	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R564	1-216-809-11	METAL CHIP 100 5% 1/16W	
R566	1-217-671-11	METAL CHIP 1 5% 1/10W	
R567	1-217-671-11	METAL CHIP 1 5% 1/10W	
R568	1-217-671-11	METAL CHIP 1 5% 1/10W	
R569	1-217-671-11	METAL CHIP 1 5% 1/10W	
R571	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R573	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R574	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R577	1-216-817-11	METAL CHIP 470 5% 1/16W	
R578	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R580	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R581	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R583	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R585	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R586	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R587	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R589	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R590	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R591	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R592	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R594	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R595	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R596	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R597	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R598	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R599	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R796	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R797	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R799	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R887	1-216-816-11	METAL CHIP 390 5% 1/16W	
R888	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R889	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R893	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R894	1-216-813-11	METAL CHIP 220 5% 1/16W	
R895	1-216-819-11	METAL CHIP 680 5% 1/16W	
R896	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R897	1-216-820-11	METAL CHIP 820 5% 1/16W	
R898	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R899	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R971	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R973	1-216-817-11	METAL CHIP 470 5% 1/16W	
R974	1-216-817-11	METAL CHIP 470 5% 1/16W	
R975	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R976	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R977	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R978	1-216-864-11	METAL CHIP 0 5% 1/16W	
R979	1-216-833-11	METAL CHIP 10K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
R980	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R981	1-216-809-11	METAL CHIP 100 5% 1/16W	
R982	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R983	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R984	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R985	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R986	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R987	1-216-813-11	METAL CHIP 220 5% 1/16W	
R988	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R989	1-216-809-11	METAL CHIP 100 5% 1/16W	
R991	1-809-354-11	THERMISTOR, NTC (2125) 3.3K	
R993	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R994	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R995	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R996	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R999	1-218-313-11	METAL CHIP 560 0.50% 1/16W	

< COMPOSITION CIRCUIT BLOCK >

Ref. No.	Part No.	Description	Remarks
RB501	1-236-412-11	NETWORK, RES 1.0K	
RB502	1-236-412-11	NETWORK, RES 1.0K	
RB503	1-236-408-11	NETWORK, RES 470	
RB504	1-236-400-11	NETWORK, RES 100	
RB507	1-236-400-11	NETWORK, RES 100	
RB508	1-236-412-11	NETWORK, RES 1.0K	
RB509	1-236-412-11	NETWORK, RES 1.0K	
RB510	1-236-412-11	NETWORK, RES 1.0K	
RB511	1-236-412-11	NETWORK, RES 1.0K	
RB512	1-236-424-11	NETWORK, RES 10K	
RB513	1-236-424-11	NETWORK, RES 10K	
RB514	1-236-424-11	NETWORK, RES 10K	
RB517	1-236-400-11	NETWORK, RES 100	
RB520	1-236-400-11	NETWORK, RES 100	
RB521	1-236-400-11	NETWORK, RES 100	
RB522	1-236-400-11	NETWORK, RES 100	
RB523	1-236-400-11	NETWORK, RES 100	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remarks
RV161	1-238-852-11	RES, ADJ, CERMET 470 (Y/C SEP.)	

< THERMISTOR >

Ref. No.	Part No.	Description	Remarks
TH001	1-808-819-11	THERMISTOR, NTC (2125)	
TH121	1-809-358-11	THERMISTOR, NTC (2125)	
TH122	1-809-356-11	THERMISTOR, NTC (2125)	
TH123	1-809-350-21	THERMISTOR, NTC (2125)	
TH202	1-809-354-11	THERMISTOR, NTC (2125)	

< FLAT CABLE >

Ref. No.	Part No.	Description	Remarks
W001	1-651-108-11	FP-30 FLEXIBLE BOARD	
W503	1-650-066-11	FP-11 FLEXIBLE BOARD	

< VIBRATOR >

Ref. No.	Part No.	Description	Remarks
X301	1-577-117-11	VIBRATOR, CRYSTAL (3.58MHz)	
X501	1-579-368-31	VIBRATOR, CRYSTAL (11.7MHz)	
X520	1-579-558-11	VIBRATOR, CRYSTAL (11.5MHz)	

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A-7063-874-A YP-13 BOARD, COMPLETE

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(Ref. No. 9,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remarks
C201	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C202	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C203	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C204	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C205	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C206	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C207	1-128-257-21	ELECT CHIP 33uF 20% 10V	
C208	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C209	1-164-336-11	CERAMIC CHIP 0.33uF 25V	
C210	1-128-257-21	ELECT CHIP 33uF 20% 10V	
C211	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C212	1-164-336-11	CERAMIC CHIP 0.33uF 25V	
C213	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C216	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	
C217	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C220	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C221	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C222	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C251	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C255	1-135-163-21	TANTAL. CHIP 47uF 20% 4V	
C256	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	

< IC >

Ref. No.	Part No.	Description	Remarks
IC201	8-759-080-34	IC TA75W01FU-TE12R	
IC202	8-759-234-77	IC TC4S66F	
IC203	8-759-058-45	IC NJM3403AV (TE2)	
IC204	8-759-234-77	IC TC4S66F	

< RESISTOR >

Ref. No.	Part No.	Description	Remarks
R201	1-216-803-11	METAL CHIP 33 5% 1/16W	
R202	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R203	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R204	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R205	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R206	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R207	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R208	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R209	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R210	1-216-850-11	METAL CHIP 270K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
R211	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R212	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R213	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R214	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R215	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R216	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R220	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R221	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R222	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R251	1-216-803-11	METAL CHIP 33 5% 1/16W	
		< SENSOR >	
SE001	1-810-024-31	SENSOR, ANGULAR VELOCITY (PS SENSOR)	
SE002	1-810-024-41	SENSOR, ANGULAR VELOCITY (YS SENSOR)	
		< FLAT CABLE >	
W212	1-650-063-11	FP-8 FLEXIBLE BOARD	

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A-7063-869-A JK-108 BOARD, COMPLETE

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(Ref. No. 4,000 Series)

Ref. No.	Part No.	Description	Remarks
		< CAPACITOR >	
C517	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
		< DIODE >	
D517	8-719-045-87	DIODE MA4Z082WA-TX	
D518	8-719-045-87	DIODE MA4Z082WA-TX	
D519	8-719-045-87	DIODE MA4Z082WA-TX	
D520	8-719-045-87	DIODE MA4Z082WA-TX	
D521	8-719-045-87	DIODE MA4Z082WA-TX	
D524	8-719-404-46	DIODE MA110	
D525	8-719-404-46	DIODE MA110	
D526	8-719-404-46	DIODE MA110	
D531	8-719-420-14	DIODE MA8082-M	
D533	8-719-404-46	DIODE MA110	
D534	8-719-404-46	DIODE MA110	
		< TRANSISTOR >	
Q517	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
		< RESISTOR >	
R518	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R519	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R520	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R521	1-216-864-11	METAL CHIP 0 5% 1/16W	
R522	1-216-864-11	METAL CHIP 0 5% 1/16W	
R523	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< FLAT CABLE >	
W517	1-650-065-11	FP-10 FLEXIBLE BOARD	

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LS-33 BOARD, COMPLETE

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(Ref. No. 10,000 Series)

Ref. No.	Part No.	Description	Remarks
		< DIODE >	
D001	8-719-989-52	DIODE GL4600S	
		< HOLE ELEMENT >	
H001	8-719-987-62	DIODE LT140SAZ	
H002	8-719-987-62	DIODE LT140SAZ	
		< TRANSISTOR >	
Q001	8-729-012-46	TRANSISTOR PT4600FS	
Q002	8-729-012-46	TRANSISTOR PT4600FS	
		< RESISTOR >	
R003	1-216-033-00	METAL CHIP 220 5% 1/10W	
R004	1-216-033-00	METAL CHIP 220 5% 1/10W	
R010	1-216-033-00	METAL CHIP 220 5% 1/10W	
R011	1-216-033-00	METAL CHIP 220 5% 1/10W	
		< SWITCH >	
S002	1-572-987-11	SWITCH, PUSH (3 KEY)	(REC PROOF, ME/MP-HG)

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A-7053-872-A MF-244 BOARD, COMPLETE

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(Ref. No. 7,000 Series)

Ref. No.	Part No.	Description	Remarks
		< CAPACITOR >	
C971	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
		< CONNECTOR >	
CN971	1-691-486-11	CONNECTOR, FFC/FPC 7P	
CN972	1-764-703-11	CONNECTOR, FFC/FPC (LIF) 4P	
		< SWITCH >	
S972	1-223-567-11	RES, VAR, CARBON 10K/10K (FOCUS)	

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A-7071-862-A SW-222 BOARD, COMPLETE

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(Ref. No. 2,000 Series)

Ref. No.	Part No.	Description	Remarks
		< SWITCH >	
S903	1-553-977-00	SWITCH, SLIDE (STANDBY)	
S904	1-692-682-11	SWITCH, TACTILE (RUBBER)	(REC START/STOP)
		< FLAT CABLE >	
W903	1-650-070-11	FP-699 FLEXIBLE BOARD	

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MISCELLANEOUS
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Ref. No.	Part No.	Description	Remarks
31	1-466-795-21	REMOTE COMMANDER (RMT-702)(E)	
31	1-466-795-31	REMOTE COMMANDER (RMT-702)(EXCEPT E)	
34	1-542-180-11	MICROPHONE ASSY	
37	1-692-821-11	SWITCH ASSY BLOCK	
51	1-467-529-11	SWITCH BLOCK, CONTROL (AEP, UK)	
51	1-467-529-21	SWITCH BLOCK, CONTROL (E, AUS, JE)	
67	1-692-257-41	SWITCH, PUSH (ZOOM)	
94	1-643-806-11	FP-539 FLEXIBLE BOARD (E, AUS, JE)	
108	1-691-471-11	CONNECTOR, TRANSLATION 11P	
112	1-751-487-11	CABLE, FLEXIBLE FLAT (FFC-104)	
115	1-547-635-21	LENS, ZOOM (VCL-6110WF)	
120	1-547-529-21	FILTER BLOCK, OPTICAL	
264	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
324	1-691-254-13	CONNECTOR, TRANSLATION 10P	
BL951	1-519-746-21	TUBE, FLUORESCENT (0.7INCH) (E, AUS, JE)	
IC784	A-7030-371-A	CCD BLOCK ASSY (ICX059AK-1)(CCD IMAGER)	
J571	1-537-373-51	JACK BOARD ASSY (VIDEO, AUDIO L/R, RFU DC OUT)	
LCD901	8-753-010-01	LCX004AK-1 (E, AUS, JE)	
M901	A-7048-669-A	DRUM ASSY (DGH-96A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM	
S001	1-572-986-11	SWTICH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB) (AEP, UK)	

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ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remarks
	1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE)(E, JE)	
	1-573-291-11	CONNECTOR, CONVERSION (AEP, UK, AUS)	
	1-575-334-11	CORD, CONNECTION (A/V)	
	1-575-335-21	CORD, CONNECTION (S VIDEO)	
	1-751-271-11	CORD, CONNECTION (A/V)	
⚠	1-528-113-21	BATTERY, LITHIUM (AEP)	
⚠	1-528-113-32	BATTERY, LITHIUM (AEP)	
	3-712-673-01	SCREWDRIVER (E)	
	3-738-517-01	BELT (S), SHOULDER	
	3-758-022-11	MANUAL, INSTRUCTION(ENGLISH/SPANISH) (AEP, UK)	
	3-758-022-41	MANUAL, INSTRUCTION(GERMAN/ITALIAN)(AEP)	
	3-758-022-51	MANUAL, INSTRUCTION(FRENCH/DUTCH)(AEP)	
	3-758-022-61	MANUAL, INSTRUCTION(SWEDISH/PORTUGUESE) (AEP)	
	3-758-483-51	MANUAL, INSTRUCTION(ENGLISH/SPANISH) (E, AUS, JE)	
	3-758-483-61	MANUAL, INSTRUCTION(GERMAN/FRENCH)(E, JE)	
	3-758-483-71	MANUAL, INSTRUCTION(ARABAIC)(E)	
	3-758-483-81	MANUAL, INSTRUCTION(CHINESE)(E, JE)	
*	3-958-101-01	CUSHION (LOWER)	
*	3-958-100-01	CUSHION, ACC	
*	3-954-315-51	INDIVIDUAL CARTON	
*	A-6767-706-A	RFU ADAPTOR (RFU-89EA)(E, JE)	
	A-6768-255-A	RFU ADAPTOR (RFU-90AS)(AUS)	
**	AC-V35	AC POWER ADAPTOR (EXCEPT UK)	
**	AC-V35A	AC POWER ADAPTOR (AEP, UK)	
***	NP-55H	BATTERY PACK (AEP)	
***	NP-66	BATTERY PACK (EXCEPT AEP)	

NOTE.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 6
INTERFACE • IC PIN FUNCTION

6-1. CAMERA MICRO PROCESSOR PIN FUNCTION (VC-132 BOARD IC 653: SC424603FUV(68HC11)

Pin No.	Signal Name	I/O	Function
1	VTR SI	I	Serial data input from mode control micro processor (VC-132 board IC902).
2	$\overline{\text{VTR SCK}}$	I	Serial data transfer clock for mode control micro processor.
3	$\overline{\text{CAM CS}}$	I	Chip select signal from mode control micro processor.
4			Not used.
5	ZOOM FWD (W)		Zoom motor control signal. Normally "H". 20 msec period PWM signal when rotating to WIDE.
6	ZOOM REW (T)		Zoom motor control signal. Normally "H". 20 msec period PWM signal when rotating to TELE.
7, 8			Not used.
9	VD	I	V SYNC from SYNC generator (VC-132 board IC660).
10	AJST	I	Adjusting timing pulse input from SYNC generator. Normally "H".
11			Not used.
12	VDD		+5V power supply.
13	VSS		GND
14 - 16			Not used.
17	WEN	I	Write enable signal from timing generator (VC-132 board IC602). Normally "H". At the slow shutter, "L" pulse of 2V to 16V period.
18			Not used.
19	$\overline{\text{CS VAP}}$	O	Chip select signal to VAP microprocessor (VC-132 board IC745).
20			Not used.
21	EEPROM BUSY	I	BUSY signal from EEPROM (VC-132 board IC641). Normally "H". "L" pulse during data reading/writing.
22			Not used.
23	IRIS PWM	O	Iris control signal. 16 μ sec. period PWM signal.
24			Not used.
25	ZP PWM		Zoom position detection voltage output. 16 μ sec period PWM signal.
26			Not used.
27	FOCUS END LED	O	Focus end sensor LED control signal. Normally "L".
28	FOCUS END FAR	I	Focus end FAR sensor input. Normally "L".
29			Not used.
30	XIRQ		Connected to +5V.
31	VDD		+5V power supply.
32	VSS		GND
33 - 35			Not used (open).
36	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
37	CAM SO	O	Serial data output.
38	CAM SI	I	Serial data input.
39, 40			Not used (open).
41	VDD		+5V power supply.
42, 43			Not used. Connected to GND.
44	ZOOM SW		Zoom sw input.
45	MAN FOCUS (2)		Manual focus ring input (2). 0V dc to 4.8V dc voltage change according to ring position.
46	MAN FOCUS (1)	I	Manual focus ring input (1). 0V dc to 4.8V dc voltage change according to ring position .
47	ZOOM POS ×4	I	Zoom position voltage.
48	ZOOM POS	I	Zoom encorder voltage input.
49	HALL A/D	I	Hall voltage. Approx. 1V (iris open) to approx. 3.6V (iris close).
50	VRL	I	A/D port reference voltage (LOW). Connected to GND.
51	VRH	I	A/D port reference voltage (HIGH). Connected to +5V.
52	VSS		GND
53	$\overline{\text{VAP RESET}}$	O	VAP microprocessor reset signal. Normally "H". "L" when reset.
54, 55			Not used.
56	EEPROM RESET	O	Reset signal to EEPROM (VC-132 board IC641).
57	$\overline{\text{OPD RESET}}$	O	Reset signal to OPD (VC-132 board IC656). "H" in camera mode, "L" in VTR mode.
58	$\overline{\text{PDR RESET}}$	O	Focus predriver (VC-132 board IC655). reset signal. Normally "H". "L" when reset.
59	$\overline{\text{CAM ON}}$	O	A/D converter (VC-132 board IC604). on/off signal. Normally "L".
60	$\overline{\text{NTSC}}$	O	NTSC: "L". PAL: "H".
61	IRQ		Connected to +5V.
62	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator.
63	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (VC-132 board IC659).
64	$\overline{\text{CS CAM OPD}}$	O	Chip select signal to OPD.
65	D/A STB	O	Strobe signal to camera section EVR (VC-132 board IC654).
66	$\overline{\text{CS EEPROM}}$	O	Chip select signal to EEPROM .
67	$\overline{\text{CS AF OPD}}$	O	Chip select signal to OPD.
68	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver.
69	$\overline{\text{CORE RESET}}$		Reset signal to camera core. Normally "H". "L" when reset.
70	VSS		GND
71	VDD		+5V power supply.
72			Not used.
73	EXTAL	I	20 MHz clock oscillation circuit.
74	XTAL	O	
75	$\overline{\text{RESET}}$	I	Reset signal from mode control micro processor. Normally "H". "L" when reset.
76	MODB		Connected to +5V.
77	MODA		Connected to GND.
78	RXD		Not used.
79	TXD		Not used.
80	VTR SO	O	Serial data output to mode control micro processor.

6-2. VAP MICRO PROCESSOR PIN FUNCTION (VC-132 BOARD IC745: CXP80620A-031R)

Pin No.	Signal Name	I/O	Function
1-4			Not used.
5	VAP EOC	I	Conversion completion signal output from A/D converter (VC-132 board IC744).
6	VAP SIN	I	Conversion serial data input from A/D converter.
7	VAP SOUT	O	Channel change data to A/D converter.
8	VAP SCK	I	Serial clock from A/D converter.
9	VAP CS	O	Chip select signal to A/D converter. 1 msec period pulse.
10-36			Not used.
37	MP	I	Connect to GND.
38	VAP RESET	I	Reset signal from camera microprocessor (VC-132 board IC653).
39	GND		GND.
40	XTAL	O	12MHz clock oscillation circuit.
41	EXTAL	I	
42	VAP CS	I	Chip select signal from camera microprocessor. V period pulse.
43	CAM SI	I	Serial data input from camera microprocessor.
44	CAM SO	O	Serial data output to camera microprocessor.
45	CAM SCK	I	Serial data transfer clock for camera microprocessor.
46-49			Not used.
50	A VSS		GND.
51	AV REF	I	GND.
52	A VDD		+5V power supply.
53-68			Not used. Connect to GND.
69-72			Not used (open).
73	Y PWM	O	Horizontal prism control signal.
74	P PWM	O	Vertical prism control signal.
75, 76		I	Connect to +5V.
77-81			Not used (open).
82	C RESET	O	Reset signal output. "H" at power ON.
83			Not used (open).
84, 85			Not used. Connect to GND.
86	GND		GND.
87	VDD		+5V power supply.
88	Vpp		+5V power supply.
89-100			Not used (open).

6-3. MECHANISM CONTROL MICRO PROCESSOR PIN FUNCTION (VS-99 BOARD IC501: CXP80624A-034R)

<table>
<tr><th>Pin No.</th><th>Signal Name</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>RP PB MODE</td><td>O</td><td>REC/PB switching signal of REC/PB amplifier (VS-99 board IC001) and ATF servo IC (VS-99 board IC504). "H" : PB.</td></tr>
<tr><td>2</td><td>FE ON</td><td>O</td><td>Flying erase oscillation on/off control signal. "L": Oscillation.</td></tr>
<tr><td>3</td><td>JOG VD</td><td>O</td><td>False VD signal inserted in playback video signal during variable speed playback.</td></tr>
<tr><td>4</td><td>JOG</td><td>O</td><td>Variable speed playback/normal playback switching signal of video circuit.
"H": Variable speed playback.</td></tr>
<tr><td>5</td><td>MIC EXT/INT</td><td>I</td><td>External microphone monaural/stereo discrimination input.
"L": When monaural microphone is used.</td></tr>
<tr><td>6</td><td>PB 1.7M DET</td><td>I</td><td>AFM stereo tape/monaural tape discrimination input.
"H": During stereo or bilingual tape playback.</td></tr>
<tr><td>7</td><td>JACK MONO /ST DET</td><td>I</td><td>Monaural/stereo discrimination input of audio input/output terminal.
"L": When jack is inserted in right channel terminal.</td></tr>
<tr><td>8</td><td>INT VD</td><td>O</td><td>Internal VD signal.</td></tr>
<tr><td>9</td><td>SYSTEM SYNC (PBV)</td><td>O</td><td>System synchronizing signal which becomes reference for character generator, communication, LANC synchronization. When CAM: Locks to CAM VD (Pin (62)).
When VTR: Locks to VTR SYNC (Pin (60)).</td></tr>
<tr><td>10</td><td>SYNC DET</td><td>O</td><td>Sync detect output. "L" when sync is detect.</td></tr>
<tr><td>11</td><td>E/L DET</td><td>I</td><td>Normal/Hi8 discrimination input. "H" when Hi8 tape playback.</td></tr>
<tr><td>12</td><td>MIC MONO /ST DET</td><td>I</td><td>External microphone monaural/stereo discrimination input.
"L": When monaural microphone is used.</td></tr>
<tr><td>13</td><td>MODE SW 0</td><td>I</td><td rowspan="3">Mode switch input.
<table>
<tr><th></th><th>BL</th><th>END</th><th>EJECT</th><th>USE</th><th>LOAD</th><th>READY</th><th>TURN</th><th>REC/PB</th><th>FF</th></tr>
<tr><td>M SW 0</td><td>H</td><td>L</td><td>L</td><td>H</td><td>L</td><td>H</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>M SW 1</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td>H</td><td>L</td></tr>
<tr><td>M SW 2</td><td>H</td><td>H</td><td>H</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>14</td><td>MODE SW 1</td><td>I</td></tr>
<tr><td>15</td><td>MODE SW 2</td><td>I</td></tr>
<tr><td>16</td><td>CC DOWN SW</td><td>I</td><td>Cassette compartment down switch input. "L": down.</td></tr>
<tr><td>17</td><td>REC PROOF SW</td><td>I</td><td>Recording-proof switch input. "H": REC prohibition.</td></tr>
<tr><td>18</td><td>ME/MP SW</td><td>I</td><td>ME/MP switch input. "L": MP. "H": ME.</td></tr>
<tr><td>19</td><td>E/L (Hi8/NORMAL) DET</td><td>I</td><td>Normal/Hi8 discrimination input. "H": When section recorded in Hi8 mode is played back.</td></tr>
<tr><td>20</td><td>VIDEO MUTE</td><td>O</td><td>Video output mute signal. "H" mute.</td></tr>
<tr><td>21</td><td>LINE MIX</td><td>O</td><td>"H" when menu display bilingual switch is at "Off" and no plug is inserted in right audio output terminal, during playback. (Monaural signal is output after L/R mixing). "H" also when no plug is inserted in right audio output terminal in camera mode (However, when external monaural microphone is not used.).</td></tr>
<tr><td>22</td><td>MX SEL 1</td><td>O</td><td rowspan="2">When recording: Monaural/stereo switching signal.
<table>
<tr><th></th><th>Monaural</th><th>Stereo</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>L</td></tr>
<tr><td>MX SEL 2</td><td>H</td><td>L</td></tr>
</table>
When playing back: Monaural/stereo/bilingual switching signal.
<table>
<tr><th></th><th>Stereo</th><th>Main</th><th>Sub</th><th>Monaural</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>L</td><td>H</td><td>L</td></tr>
<tr><td>MX SEL 2</td><td>L</td><td>H</td><td>L</td><td>H</td></tr>
</table></td></tr>
<tr><td>23</td><td>MX SEL 2</td><td>O</td></tr>
<tr><td>24</td><td>MAT ON/OFF</td><td>O</td><td>Matrix on/off signal. "H": Matrix on (stereo recording/playback)</td></tr>
<tr><td>25</td><td>E MODE (Hi8/NORM)</td><td>O</td><td>Video circuit normal/Hi8 switching signal. "H": Hi8 mode.</td></tr>
<tr><td>26</td><td>CAM/LINE</td><td>O</td><td>Camera input/line input switching signal. "H": Camera input.</td></tr>
<tr><td>27</td><td>DS ON</td><td>O</td><td>Data screen on/off signal. Not used.</td></tr>
<tr><td>28</td><td>EDIT</td><td>O</td><td>Video circuit normal/EDIT switching signal. "L": When edit of menu display is at "ON".</td></tr>
<tr><td>29</td><td>UNLOAD</td><td>O</td><td>Loading motor control signal. When unloading: "H" or "H" pulse.</td></tr>
<tr><td>30</td><td>LOAD</td><td>O</td><td>Loading motor control signal. When loading: "H" or "H" pulse.</td></tr>
<tr><td>31</td><td>LM LIM CONT</td><td>O</td><td>Loading motor limiter control signal. Momentarily "H" when loading.</td></tr>
<tr><td>32</td><td>COMP REC</td><td>O</td><td>Video input/S video input switching signal. "H": Video input.</td></tr>
</table>

Pin No.	Signal Name	I/O	Function
33	DRUM FWD/RVS	O	Drum rotation direction control signal. Normally "L".
34	NC		Not used (open).
35	NC		
36	REEL HALL CONT	O	Reel FG sensor (HALL element) power supply control signal. When active: "L".
37	MP		Connected to GND.
38	RESET	I	Reset signal from mode control micro processor (VC-132 board IC902). When reset: "L".
39	VSS		GND
40	XTAL	O	11.89 MHz clock oscillation circuit.
41	EXTAL	I	
42	MECHA CON CS	I	Chip select signal from mode control micro processor (VC-132 board IC902).
43	DATA TO SLAVE	I	Serial data input from mode control micro processor.
44	DATA TO MASTER	O	Serial data output to mode control micro processor.
45	MODECON SCK	I	Serial clock input from mode control micro processor.
46	AUDIO MUTE	O	Audio output mute signal. "H": Mute.
47	MONO REC (1.7M ON/OFF)	O	Monaural/stereo recording switching signal. "H": During monaural recording (1.7 MHz REC AFM carrier off).
48	ZOOM POS	O	Not used. Connected to GND.
49	THERMIST	I	Used.
50	AVSS		A/D converter system GND.
51	AVREF		A/D converter system reference voltage. Connected to SS5V.
52	AVDD		A/D converter system power supply. Connected to SS5V.
53	NC		Not used. Connected to GND.
54	END SENS	I	Tape end detection signal. Normally: "L". "H" pulse at tape end.
55	TOP SENS	I	Tape top detection signal. Normally: "L". "H" pulse at tape top.
56	DEW DET	I	Condensation detection signal. "L" when condensation present.
57	BATT SENSE	I	Battery voltage input for battery end detection. A/D input.
58	ATF ERROR	I	ATF error, ATF lock error input.
59	S REEL FG	I	S reel FG signal input.
60	T REEL FG	I	T reel FG signal input.
61	NC		Not used. Connected to GND.
62	CAM VD	I	VD signal from camera circuit sync generator (VC-132 board IC660). V cycle pulse.
63	FLD (ODD/EVEN)	I	FIELD signal from camera circuit sync generator. 2V cycle pulse.
64	VTR SYNC	I	Composite sync signal separated from recording/playback Y signal.
65	PB SP/LP	I	Discriminates recording mode of playback tape during CUE/REVIEW/FF/REW. "L"=LP
66	DRUM PG	I	Drum PG signal input. For drum phase servo. 26.7 msec. cycle "H" pulse.
67	DRUM FG	I	Drum FG signal input. For drum speed servo. 4.4 msec. cycle pulse.
68	CAP FG	I	Capstan FG signal input. Approx. 1145.5 Hz during REC/PB for capstan speed servo (SP mode).
69	NC	O	Not used.
70	T/E LED ON	O	TAPE LED on/off signal. 200 msec. cycle "H" pulse during REC/PB.
71	NC	O	Not used.
72	ME/MP OUT	O	Recording current switching signal. "H": ME tape.
73	CAP PWM	O	Capstan error signal output. 20.15 μsec. PWM signal.
74	DRUM PWM	O	Drum error signal output. 20.15 μsec. PWM signal.
75	CFG HMS	I	Capstan FG signal input. For tape counter.
76	S JACK IN	I	"L" when plug is inserted in S VIDEO terminal.
77	LANC IN	I	Not used. Connected to GND.

Pin No.	Signal Name	I/O	Function
78	LANC OUT	O	Not used.
79	LM LIM ON	I	Loading motor limiter on detection signal. Normally "H". "L" when limiter is on.
80	AGC SLOW	I	Not used.
81	DRUM ON	O	Drum motor on/off signal. "H" (Approx. 1.3V): Drum on.
82	CLOG DET	I	Head clog detection signal. "L": Normal.
83	REF PILOT	O	Reference pilot signal for ATF servo. Output after synchronizing with drum rotation and switching 4 frequencies. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz, f4=146.5 kHz.
84	NC		Not used. Connected to GND.
85	13μ/10μ SW	I	Not used. Connected to GND.
86	VSS		GND.
87	VDD		Connected to SS5V.
88	VPP		
89	DRUM ACC	O	Drum motor acceleration signal.
90	DRUM BLK	O	Drum motor brake signal. Normally: "L".
91	SP/LP	O	SP/LP switching signal. "L": LP.
92	NC	O	Not used.
93	AUDIO OUT/IN	O	Audio input/output switching signal. "L": Audio output.
94	NC	O	Not used.
95	VA PB MODE	O	REC/PB switching signal of video;audio circuit. "H": PB.
96	VI SWP	O	RF switching pulse signal for video circuit. 25Hz, 50% duty pulse.
97	RF SWP	O	RF switching pulse signal for REC/PB amp and audio circuit. 25 Hz, 50% duty pulse.
98	H CHG	O	Head switching signal.
99	CAP ON	O	Capstan driver on/off control signal. "H": Capstan on.
100	CAP FWD/RVS	O	Capstan rotation direction control signal. "H": FWD. "L": RVS.

6-4. MODE CONTROL MICRO PROCESSOR PIN FUNCTION
(VC-132 BOARD IC902: MB89098PFV-G-104)

Pin No.	Port Name	Signal Name	I/O	Function
1	MOD0	TEST MODE 0	I	Connected to GND.
2	MOD1	TEST MODE 1	I	Connected to GND.
3	X0	X0	I	10 MHz clock oscillation circuit.
4	X1	X1	O	
5	VSS	VSS		GND
6	XRST	$\overline{\text{RESET}}$	I	Reset input.
7	P00/EI20	$\overline{\text{DATA SW}}$	I	Date (+) key (CF block S924) input. Normally "H". "L" when key is pressed.
8	P01/EI21	$\overline{\text{TIME SW}}$	I	Time key (CF block S925) input. Normally "H". "L" when key is pressed.
9	P02/EI22	$\overline{\text{EJECT SW}}$	I	Cassette eject switch (DD-55 board S451) input. Normally "H". "L" when switch is pressed.
10	P03/EI23	$\overline{\text{VTR MODE SW}}$	I	Power supply switch input. "L" when power supply switch is at "Video".
11	P04/EI24	AUTO LOCK SW	I	Auto lock switch (CF block S927) input. "H" during auto lock.
12	P05/EI25	$\overline{\text{START/STOP SW}}$	I	Start/stop key (SW-222 board S904) input. "L" when key is pressed (However, when power supply switch is at "Camera" and stand-by switch at "Standby".)
13	P06/EI26	$\overline{\text{CC DOWN SW}}$	I	Cassette compartment down switch (mechanism section) input. "L" when cassette compartment is locked.
14	P07/EI27	$\overline{\text{CAM+STBY SW}}$	I	Power supply switch, stand-by switch (SW-222 board S903) input. "L" when power supply switch is at "Camera" and stand-by switch at "Standby".
15	P10/EI10	BATT IN	I	Main battery detection input. "H" when main battery is loaded or external power supply is connected.
16	P11/EI11	SYSTEM SYNC (PB V)	I	System sync signal from mechanism control micro processor (VS-99 board IC501). Timing reference signal of communication, LANC, etc.
17	P12/EI12	RF SWP	I	RF Switching pulse signal input.
18	P13/EI13	$\overline{\text{LANC POWER ON}}$	I	Power on signal input from wired remote commander. "L" when power switch of remote commander is pressed.
19	P14	$\overline{\text{LI PRE END}}$	I	Lithium battery end detection input. "L" when lithium battery has worn out or has not been loaded.
20	P15	$\overline{\text{EEPROM WE}}$	O	EEPROM (VC-132 board IC901) writing enable signal. "L" when writing data.
21	P16	RF SWP	I	RF switching pulse signal. 25Hz, 50% duty pulse.
22	P17	$\overline{\text{WIND ON}}$	O	Wind sound decrease control signal. "L": Wind sound decrease on.
23	P20	$\overline{\text{TALLY LED}}$	O	Tally LED on/off signal. "L" during camera recording.
24	P21	$\overline{\text{SYSTEM RESET}}$	O	Reset signal of all systems. Normally "H". "L" when reset.
25	P22	NC		Not used.
26	COMD	CLK 10M/$\overline{\text{32k}}$ (BATT IN)	I	Mode control micro processor clock frequency switching signal. "H" (10 MHz) when main battery is loaded or external power supply is connected. "L" (32 kHz) when backed up by lithium battery.
27	P24/SI0	DATA TO MOD	I	Serial data input from marker IC. (VS-99 board IC521).
28	P25/SO0	DATA TO MK	O	Serial data output to marker IC (VS-99 bard IC521).
29	P26/SCK0	$\overline{\text{SCK MK}}$	O	Serial clock output to marker IC (VS-99 board IC521).
30	P27/RMC1	$\overline{\text{SIRCS IN}}$	I	Infrared remote commander signal input.
31	P30/SEG31	$\overline{\text{CS MK}}$	O	Chip select signal to marker IC (VS-99 baord IC521).
32	P31/SEG30	NC		Not used.
33	P32/SEG29	$\overline{\text{CS EEPROM}}$	O	Chip select signal to EEPROM (VC-132 board IC901).
34	P33/SEG28	$\overline{\text{CS SR}}$	O	Chip select signal to video circuit Y signal process IC (VS-99 board IC902).
35	P34/SEG27	IN/$\overline{\text{OUT}}$	O	Video and audio input/output switching signal. "H" during input. "L" during output.
36	P35/SEG26	$\overline{\text{CS SG}}$	O	Chip select signal to SYNC generator (VC-132 board IC660).
37	P36/SEG25	STB DA	O	Strobe signal to video circuit EVR (VS-99 board IC003, IC005).
38	P37/SEG24	$\overline{\text{CS TAI}}$	O	Chip select signal to camera micro processor (VC-132 board IC653).
39	P40/SEG23	CAM/$\overline{\text{LINE}}$		Not used.
40	P41/SEG22			Not used.
41	P42/SEG21			
42	P43/SEG20			
43	P44/SEG19			
44	P45/SEG18	SEG18	O	
45	P46/SEG17	SEG17	O	LCD segment terminal drive signal. Pulse of 4 values (0V, 1.6V, 3.2V and 4.8V).
46	P47/SEG16	SEG16	O	
47	VCC	VCC		+5V power supply (+3V power supply during backup).
48	SEG15	SEG15	O	LCD segment terminal drive signal. Pulse of 4 values (0V, 1.6V, 3.2V, and 4.8V).
49	SEG14	SEG14	O	
50	SEG13	SEG13	O	
51	SEG12	SEG12	O	
52	SEG11	SEG11	O	
53	SEG10	SEG10	O	
54	SEG09	SEG09	O	
55	SEG08	SEG08	O	
56	VSS	VSS		GND
57	SEG07	SEG07	O	LCD segment terminal drive signal. Pulse of 4 values (0V, 1.6V, 3.2V, and 4.8V).
58	SEG06	SEG06	O	
59	SEG05	SEG05	O	
60	SEG04	SEG04	O	
61	SEG03	SEG03	O	
62	SEG02	SEG02	O	
63	SEG01	SEG01	O	
64	SEG00	SEG00	O	
65	V3	V3	I	4.8V LCD drive bias voltage
66	V2	V2	I	3.2V
67	V1	V1	I	1.6V
68	V0	V0	I	0V
69	COM0	COM0	O	LCD COM terminal drive signal. Pulse of 4 values (0V, 1.6V, 3.2V, 4.8V).
70	COM1	COM1	O	
71	COM2	COM2	O	
72	COM3	COM3	O	
73	P80/STB	$\overline{\text{CS OSD}}$	O	Chip select signal to character generator (VC-132 board IC905).
74	P81/XCS	$\overline{\text{CS MECHA}}$	O	Chip select signal to mechanism control micro processor (VS-99 board IC501).
75	P82/SI1	DATA TO MASTER	I	Serial data input signal.
76	P83/SO1	DATA TO SLAVE	O	Serial data output signal.

Pin No.	Port Name	Signal Name	I/O	Function
77	P84/SCK1	MODECON SCK	O	Serial data transfer clock.
78	P85/ECK	TG STBY 1	O	Controls 4FSC of timing generator (VC-132 board IC602). "H" when no signal in VTR mode, "L" at other times.
79	P86/TO1	VTR DD ON	O	VTR DC - DC converter control signal. "H" when power switch is at "Player" or "Camera".
80	P87/TO2	CAM DD ON	O	CAMERA DC - DC converter control signal.
81	AVSS	AVSS		A/D port GND.
82	P90/AN00	K AD IN 0	I	Key input. A/D port. No input 5V (4.9V) Edit serch (-) key (CF block S905) ....4V (3.8V to 4.2V) Edit serch (+) key (CF block S904).........3V (2.6V to 3.2V) REC key (CF block S903).......................2V (1.6V to 2.2V) Fast forward key (CF block S902) ....1V (0.5V to 1.2V) Stop key (CF block S906) ....0V (0.5V to 0.2V)
83	P91/AN01	K AD IN 1	I	Key input. A/D port. No input ....5V Menu key (CF block S909) ....3V Playback key (CF block S908) ....2V (1.6V to 2.2V) Rewind key (CF block S907) ....1V Pause key (CF block S906) 0V
84	P92/AN02	K AD IN 2	I	Key input. A/D port. No input ....5V Item key (CF block S912) ....2V Setting key (CF block S911) ....1V Slow key (CF block S910) 0V
85	P93/AN03	K AD IN 3	I	Key input. A/D port. No input ....5V Fader key (CF block S917) ....4V Auto white balance key(CF block S916) 3V Focus key (CF block S915).....................2V Bright ON/OFF key (CF block S914) .....1V Program AE key (CF block S913) 0V
86	P94/AN04	K AD IN 4	I	Key input. A/D port. No input 5V Steady shot key (CF block S922)............4V Zero memory key (CF block S921).........3V Counter/Time code (CF block S920) ......2V Index mark key (CF block S919)............1V Counter reset key (CF block S918).........0V
87	P95/AN05			Not used.
88	P96/AN06			
89	P97/AN07			
90	AVCC	AVCC		A/D port power supply (+5V).
91	PA0/AN08	BATT SENSE	I	For battery end detection, main battery voltage input. (Voltage divided into 1/2 by R906, R907).
92	PA1/AN09			Not used.
93	PA2/AN10	BRIGHT A	I	Brightness adjusting dial input. Pulse input by dial rotation.
94	PA2/AN11	BRIGHT B	I	Brightness adjusting dial input. Pulse input by dial rotation.
95	PA4/LSI	LANC IN	I	LANC serial data input.
96	PA5/LSO	LANC OUT	O	LANC serial data output.
97	PA6/COUT	BUZZER	O	Buzzer output. Normally "L", 2kHz pulse: alarm.
98	VCC	VCC		+5V power supply (+3V power supply during backup).
99	CL1	CL1	O	32 kHz clock oscillation circuit (for clock).
100	CL0	CL0	I	

6-5. INTERFACE

6-5-1. Video/Audio Block Interface

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	IC501 (91)	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	H	H
VA PB MODE	O	IC501 (95)	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC501 ㊻	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC501 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
CAM/$\overline{\text{LINE}}$	O	IC501 ㉖	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC501 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5
RP PB MODE	O	IC501 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	IC501 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
RF SWP	O	IC501 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC501 ④	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
DATA TO MASTER	O	IC501 ㊹	V period "L" pulse																					
DATA TO SLAVE	I	IC501 ㊸	V period pulse train																					
$\overline{\text{MODECON SCK}}$	I	IC501 ㊺	V period "H" pulse																					
PB SP/$\overline{\text{LP}}$ DET	I	IC501 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC501 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC501 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.

6-5-2. Servo Block Interface

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC501 (60)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC501 (59)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC501 (58)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC501 (66)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC501 (67)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC501 (68), (75)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC501 (99)	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC501 (83)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC501 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM $\overline{\text{FWD}}$/ RVS *10	O	IC501 ㉝	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ $\overline{\text{RVS}}$	O	IC501 (100)	L	H	L	H	L	H	H	L	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC501 (74)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC501 (73)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
$\overline{\text{LM LIM CONT}}$ *11	O	IC501 ㉛	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC501 (81)	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
DRUM ACC	O	IC501 (89)	L	L	L	L	L	L	L	L	L	L	*8	L	L	L	L	L	L	L	L	L	L	L
DRUM BRK	O	IC501 (90)	L	L	L	L	L	L	L	L	L	L	*8	L	L	L	L	L	L	L	L	L	L	L

*1. Inputting waveform which is similar to sine wave according to reel rotation.
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 25 Hz.
*4. 12 FG pulses input per one drum rotation, approx. 300 Hz.
*5. 520 FG pulses input per one capstan rotation. Approx. 1388 Hz when REC/PB (SP). 694 Hz when PB (LP).
*6. Four frequencies output synchronized with drum rotation. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search button pressed when playback pause mode.
*14. Mode for adjustment.

SECTION 7
ADJUSTMENTS

7-1. CAMERA SECTION ADJUSTMENT

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 7-42.

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of service tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto White balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Extension cable (40P, 0.8 mm)	J-6082-168-A	For extension between the VS-99 board (CN501) and DD-62 board (CN451)
J-8	Extension cable (38P, 0.8 mm)	J-6082-274-A	For extension between the AU-149 board (CN802) and VS-99 board (CN505)
J-9	Extension cable (16P, 0.8 mm)	J-6082-191-A	For extension between the CD-105 board (W784) and VC-132 board (CN601)
J-10	Relay board (21P, 0.5 mm)[Note 2]	J-6082-176-A	For extension between the VC-132 board (CN711) and lens block (FPC) (During the repair of the camera section)
J-11	Extension cable (21P, 0.5 mm)[Note 2]	J-6082-138-A	For extension between the VC-132 board (CN711) and lens block (FPC) (During the repair of the camera section)
J-12	Extension cable (6P, 1.5mm)	J-6082-152-A	For extension between the EVF and VS-99 board (CN903).

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched.
In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension cable (J-6082-138-A) is also attached with a 21P, 0.5 mm cable. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-132 board (CN711).

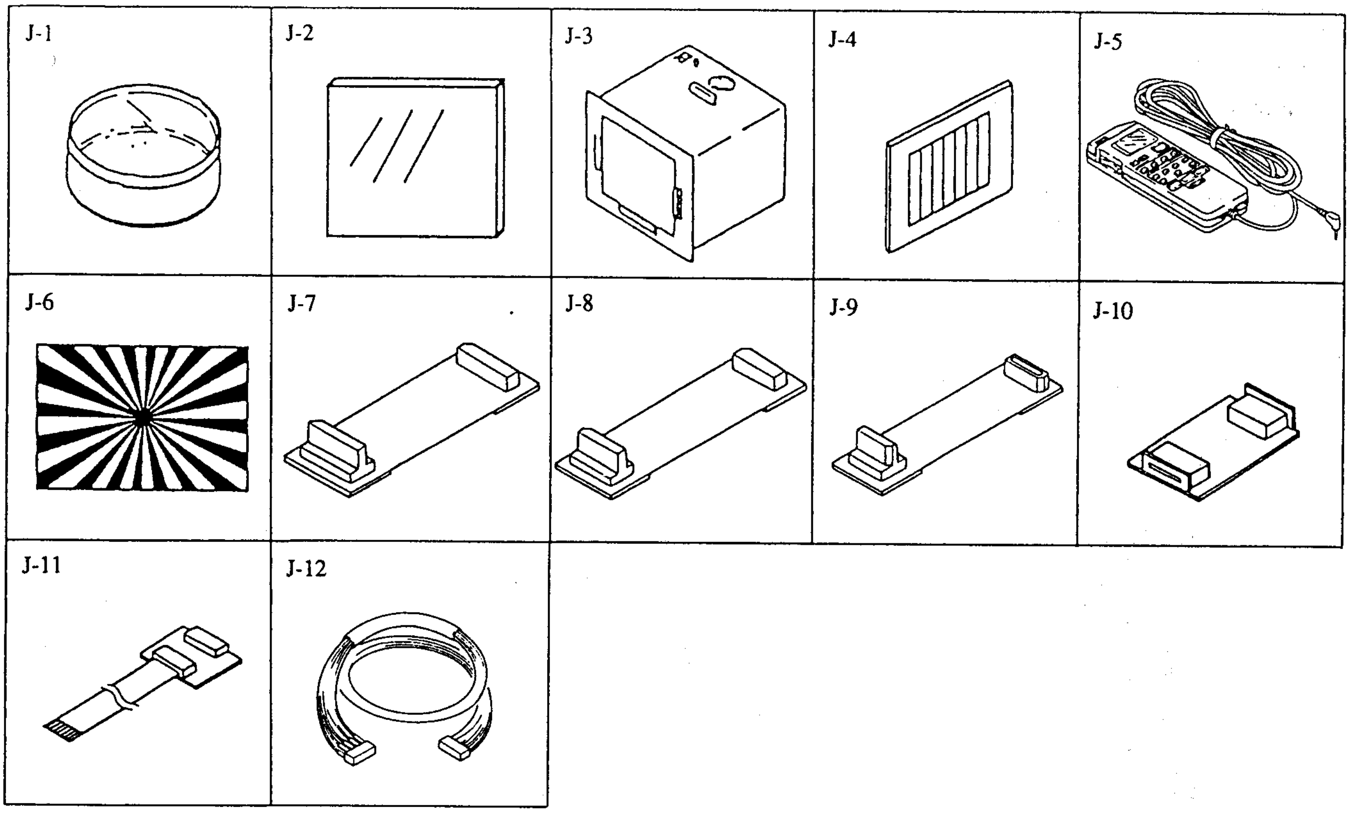

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12

Fig. 7-1.

1-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and VC-132 board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the PROGRAM AE mode and DDS display. However, by turning on the "data Screen", the same contents can be viewed on the TV monitor. If the EVF is not required, remove CN502 of the VS-99 board.

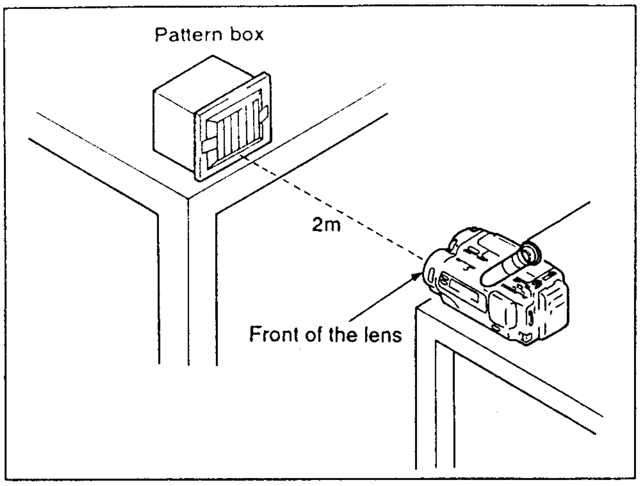

Pattern box
2m
Front of the lens

Fig. 7-2.

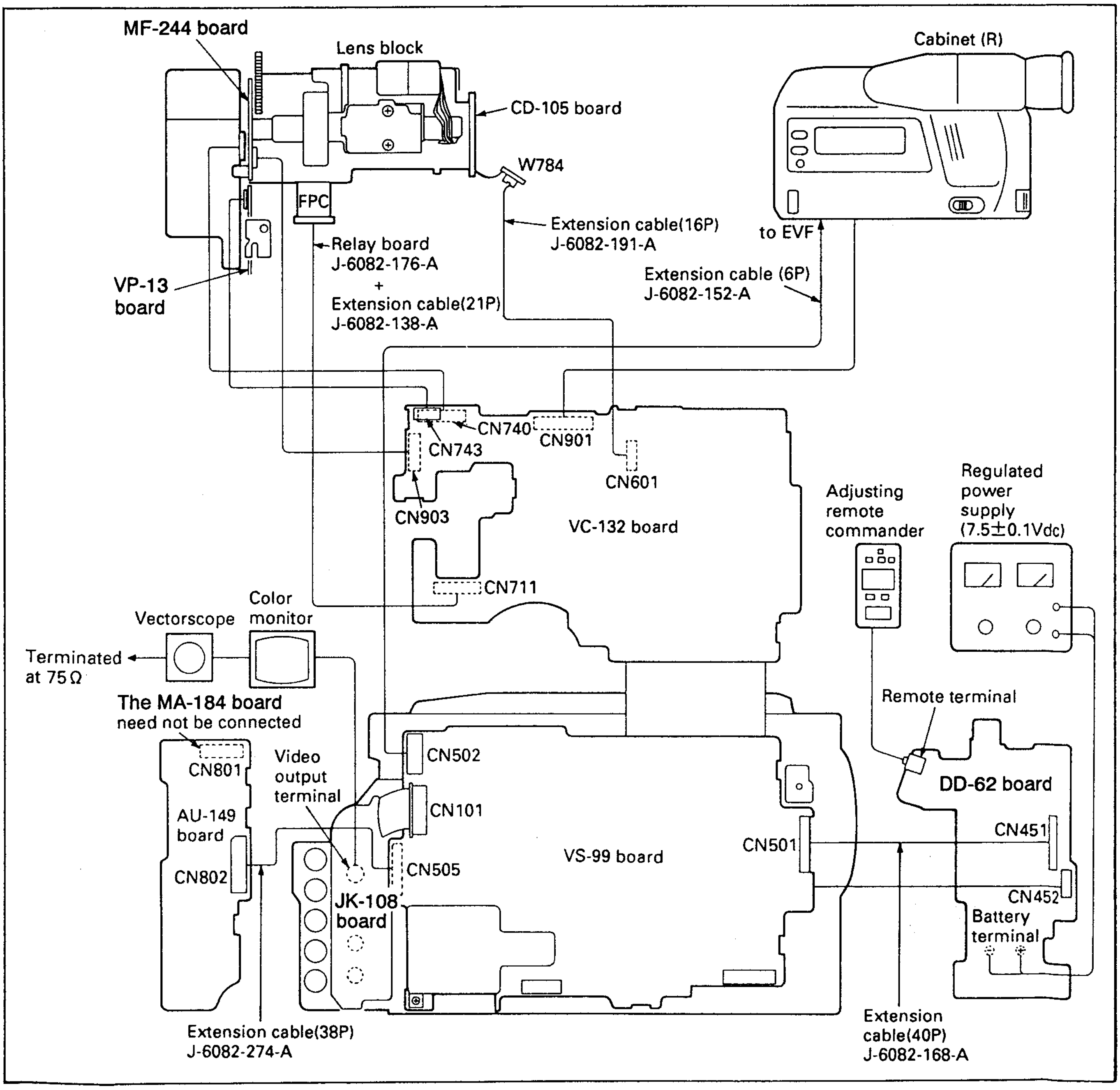

MF-244 board
Lens block
Cabinet (R)
CD-105 board
W784
FPC
Extension cable(16P)
J-6082-191-A
to EVF
Relay board
J-6082-176-A
+
Extension cable(21P)
J-6082-138-A
Extension cable (6P)
J-6082-152-A
VP-13
board
CN740
CN901
CN743
CN601
CN903
VC-132 board
Adjusting
remote
commander
Regulated
power
supply
(7.5±0.1Vdc)
CN711
Color
monitor
Vectorscope
Terminated
at 75Ω
The MA-184 board
need not be connected
CN801
Video
output
terminal
CN502
CN101
Remote terminal
DD-62 board
AU-149
board
CN802
CN505
VS-99 board
CN501
CN451
CN452
JK-108
board
Battery
terminal
Extension cable(38P)
J-6082-274-A
Extension
cable(40P)
J-6082-168-A

Fig. 7-3.

1-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

1. Camera/player power switch (Power switch unit S900) .... Camera
2. Standby switch (SW-222 board S903) .... Standby
3. Auto lock cover (CF block S927) .... Open
4. Focus button (CF block S915) .... Manual
5. Program AE button (CF block S913) .... Off
6. Steady shot switch (CF block S922) .... Off

2. Adjusting Procedure

Adjust in the given order.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

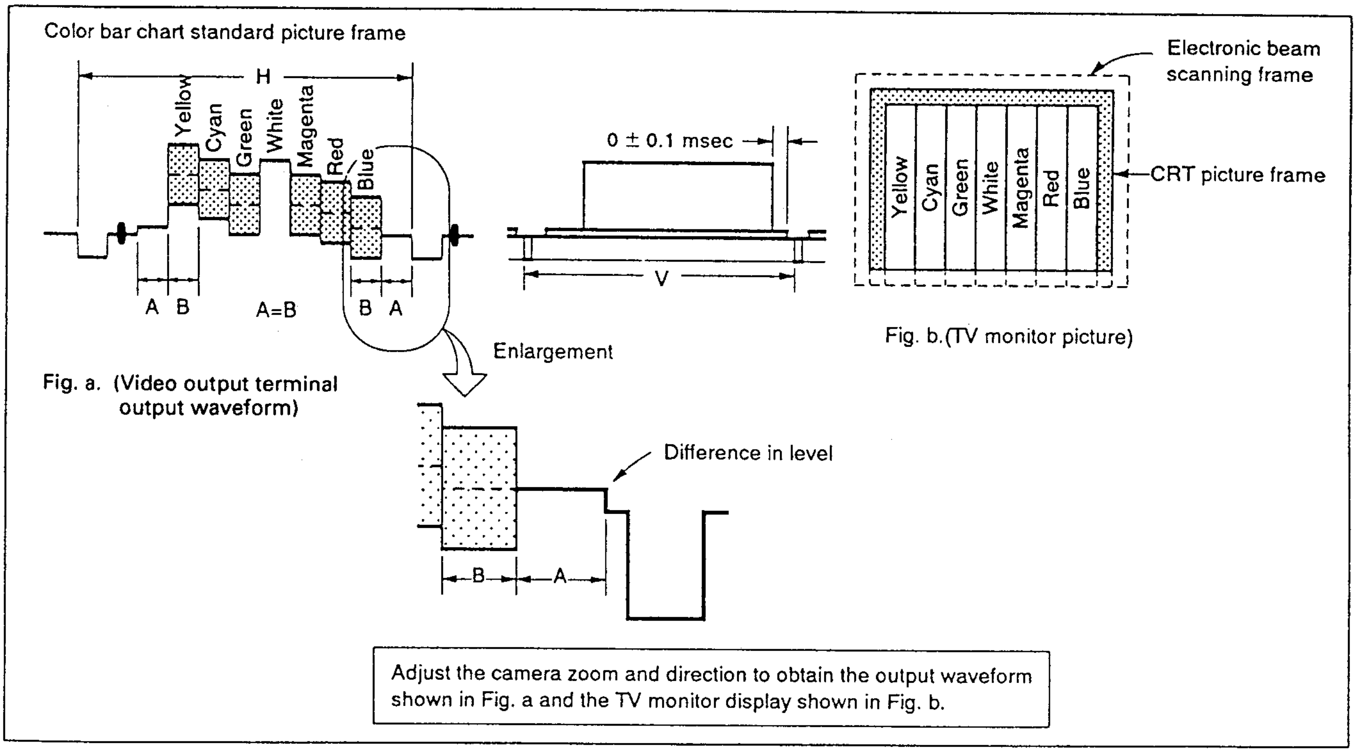

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame

Fig. a. (Video output terminal output waveform)

Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm × 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

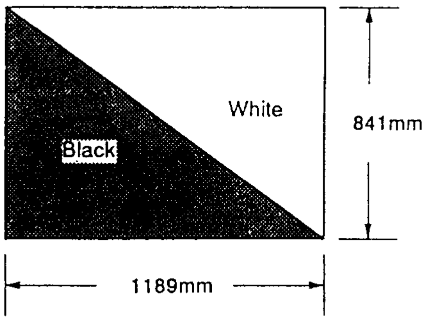

White
Black
841mm
1189mm

Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The camera section is adjusted by changing the constant or coefficient of the digital signal processing calculation, or modifying the output voltage of the EVR IC (VC-132 board IC654). This is controlled by the camera micro processor (VC-132 board IC653), which reads the data written in the nonvolatile memory (VC-132 board IC641: EEPROM), and transmits it to the digital signal processing circuit and EVR.

To perform adjustments, adjustment data written in the nonvolatile memory must be rewritten, using the adjusting remote commander.

The adjusting remote commander uses the remote commander signal line (LANC) to communicate mutually with the camera microprocessor. The page, address and the up/down commands of the data are transmitted from the adjusting remote commander to the camera micro processor. And, the page, address, and data are transmitted for the vice versa.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote control terminal (DD-62 board J452).
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 7-6.

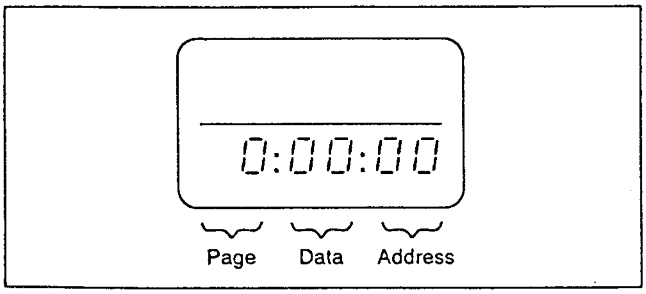


Fig. 7-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address increases when the FF (►►) button is pressed, and decreases when the REW (◄◄) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (►) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and enables the camera section (Addresses 01 to DF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (7.5V) once. This release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page F Address List

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing "Page F Data Initialization" and "Page F Data Modification". They are different from the values after executing all adjustments.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2" colspan="2">Function
[ ] contains the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>00</td><td>SET ID</td><td colspan="2">Set ID</td><td>53</td><td>53</td></tr>
<tr><td>01</td><td>NT PAL</td><td colspan="2">Micro processor mode setting</td><td>41</td><td>41</td></tr>
<tr><td>02</td><td>FT SW</td><td colspan="2">DDS display mode switching<table><tr><th>Data</th><th>Mode</th></tr><tr><td>00</td><td>Normal</td></tr><tr><td>B8</td><td>Focus position adjustment</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>03</td><td>FADER LEVEL</td><td colspan="2">AE REF level change in fader</td><td>E0</td><td>E0</td></tr>
<tr><td>04</td><td>FADER ENDTIME</td><td colspan="2">AE REF modulation time setting in fader</td><td>10</td><td>10</td></tr>
<tr><td>05</td><td>CORE Y GAIN</td><td colspan="2">Camera core Y gain</td><td>3F</td><td>3F</td></tr>
<tr><td>06</td><td>VSUB</td><td colspan="2">CCD imager V SUB voltage adjustment [IC654 ③]</td><td>80</td><td></td></tr>
<tr><td>07</td><td>VPGH</td><td colspan="2">CCD imager V RG voltage adjustment [IC654 ④]</td><td>80</td><td></td></tr>
<tr><td>08</td><td>VREF Y</td><td colspan="2">Camera core Y D/A reference voltage, SYNC level adjustment [IC654 ⑤]</td><td>6A</td><td>6A</td></tr>
<tr><td>09</td><td>VREF C</td><td colspan="2">Camera core camera D/A reference voltage, burst level adjustment [IC654 ⑥]</td><td>58</td><td>58</td></tr>
<tr><td>0A</td><td>HALL GAIN</td><td>Hall amplifier gain adjustment [IC654 ⑦]</td><td rowspan="2">} HALL adjustment</td><td>80</td><td></td></tr>
<tr><td>0B</td><td>HALL OFFSET</td><td>Hall amplifier off set adjustment [IC654 ⑧]</td><td>80</td><td></td></tr>
<tr><td>0C</td><td>LOWLIGHT START</td><td colspan="2">Low illuminance level modulation start setting</td><td>6A</td><td>6A</td></tr>
<tr><td>0D</td><td>REF 2V</td><td colspan="2">2V reference voltage for hall element [IC654 ⑫]</td><td>68</td><td>68</td></tr>
<tr><td>0E</td><td>AD REF</td><td colspan="2">Black level during A/D conversion [IC654 ⑬]</td><td>A0</td><td>A0</td></tr>
<tr><td>0F</td><td>CORE DEFTH</td><td colspan="2">CCD correction horizontal correlated control</td><td>04</td><td>04</td></tr>
<tr><td>10</td><td>CORE OTHER</td><td colspan="2">Various camera core mode settings</td><td>54</td><td>54</td></tr>
<tr><td>11</td><td>CORE APCNH</td><td colspan="2">Horizontal aperture setting</td><td>75</td><td>75</td></tr>
<tr><td>12</td><td>CORE APCNV</td><td colspan="2">Vertical aperture setting</td><td>3F</td><td>3F</td></tr>
<tr><td>13</td><td>CORE EFFECT</td><td colspan="2">Camera core special effects control</td><td>A0</td><td>A0</td></tr>
<tr><td>14</td><td>CORE MAT R</td><td>RED matrix constant</td><td rowspan="2">} Colr reproductivity adjustment</td><td>6D</td><td></td></tr>
<tr><td>15</td><td>CORE MAT B</td><td>BLUE matrix constant</td><td>26</td><td></td></tr>
<tr><td>16</td><td>CORE BURST LEVEL</td><td colspan="2">Burst level setting, color modulation ON/OFF<table><tr><th>Data</th><th>Mode</th></tr><tr><td>2C</td><td>Normal</td></tr><tr><td>2E</td><td>Color modulation stopped</td></tr></table></td><td>38</td><td>38</td></tr>
<tr><td>17</td><td>CORE CHROMA DLY</td><td colspan="2">Y/C delay adjustment</td><td>2B</td><td>2B</td></tr>
<tr><td>18</td><td>CORE Y SETUP</td><td colspan="2">Set up level setting</td><td>02</td><td>02</td></tr>
<tr><td>19</td><td>CORE APCN</td><td colspan="2">Aperture setting</td><td>17</td><td>17</td></tr>
</table>

Table 7-2 (1).

Address	Name	Function [ ] contains the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1A	CORE B Y3200 HUE	B–Y HUE	Color reproductivity adjustment	F8	
1B	CORE R Y3200 HUE	R–Y HUE		F0	
1C	CORE R Y3200 GAIN	R–Y GAIN		4F	4F
1D	CORE B Y3200 GAIN	B–Y GAIN		2A	2A
1E	CS/APCN CUT	Low illuminance aperture and chroma suppress level		22	22
1F	NEXT DEF BIT	CCD imager correction pattern	CCD imager correction data writing	00	
20	CCD DEFECT0	CCD imager correction data		00	
21	CCD DEFECT1	CCD imager correction data		00	
22	CCD DEFECT2	CCD imager correction data		00	
23	CCD DEFECT3	CCD imager correction data		00	
24	CCD DEFECT4	CCD imager correction data		00	
25	CCD DEFECT5	CCD imager correction data		00	
26	CCD DEFECT6	CCD imager correction data		00	
27	CCD DEFECT7	CCD imager correction data		00	
28	CCD DEFECT8	CCD imager correction data		00	
29	CCD DEFECT9	CCD imager correction data		00	
2A	CCD DEFECT10	CCD imager correction data		00	
2B	CCD DEFECT11	CCD imager correction data		00	
2C	CCD DEFECT12	CCD imager correction data		00	
2D	CCD DEFECT13	CCD imager correction data		00	
2E	CCD DEFECT14	CCD imager correction data		00	
2F	CLPFLG	Digital clamp mode setting		00	00
30	ADMIN	Offset minimum value setting		50	50
31	C SHIFT	C shift amount setting		02	02
32	Y SHIFT	Y shift amount setting		02	02
33	LOWLIGHT START2	Low illuminance REF level modulation start setting 2		44	44
34	LOWLIGHT CS	Low illuminance color erasure setting		00	00
35	LOWLIGHT LEVEL	Low illuminance S/N correction point setting		61	61
36	DEFECT DELAY	CCD imager correction pulse delay setting		00	00
37	APCN E ZOOM	Not used		00	00
38	RG3200H	3200k Red/Green reference data H	Auto white balance reference data input	30	
39	RG3200L	3200k Red/Green reference data L		00	
3A	BG3200H	3200k Blue/Green reference data H		58	
3B	BG3200L	3200k Blue/Green reference data L		00	
3C	SPEED S	Indoor/Outdoor determination (short)		20	20
3D	SPEED L	Indoor/Outdoor determination (long)		20	20
3E	3200 OFFSET	Pre white offset		12	12
3F	TRAN SPEED	Speed of pursur high speed for changing a source of light		02	02
40	NORM R	R regular correction coefficient, reference 80h	Auto white balance adjustment	8F	
41	NORM B	B regular correction coefficient, reference 80h		6C	
42	INDOOR S	Indoor determination shutter data		00	00
43	OUTDOOR S	Outdoor determination shutter data		00	00
44	IRIS IN	Indoor determination hall data	IRIS IN/OUT adjustment	36	
45	IRIS OUT	Outdoor determination hall data		3C	

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] contains the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>46</td><td>G LEVEL</td><td>High luminance Green integral level</td><td>02</td><td>02</td></tr>
<tr><td>47</td><td>G WIDTH</td><td>High luminance Green integral level range</td><td>03</td><td>03</td></tr>
<tr><td>48</td><td>MAT HUE</td><td>Variable linear matrix HUE coefficient</td><td>00</td><td>00</td></tr>
<tr><td>49</td><td>MAT GAIN</td><td>Variable linear matrix GAIN coefficient</td><td>00</td><td>00</td></tr>
<tr><td>4A</td><td>ADJ RCONT</td><td>Direct output value (RED)</td><td>35</td><td>35</td></tr>
<tr><td>4B</td><td>B DIFFERENCE</td><td>Reference difference from outdoor fixed value</td><td>0A</td><td>0A</td></tr>
<tr><td>4C</td><td>BOTTOM SLP R</td><td>Slant R coefficient of drawing frame bottom</td><td>30</td><td>30</td></tr>
<tr><td>4D</td><td>BOTTOM SLP B</td><td>Slant B coefficient of drawing frame bottom</td><td>58</td><td>58</td></tr>
<tr><td>4E</td><td>MIDDLE SLP R</td><td>Slant R coefficient of drawing frame middle</td><td>62</td><td>62</td></tr>
<tr><td>4F</td><td>MIDDLE SLP B</td><td>Slant B coefficient of drawing frame middle</td><td>47</td><td>47</td></tr>
<tr><td>50</td><td>TOP SLP R</td><td>Slant R coefficient of drawing frame top</td><td>6C</td><td>6C</td></tr>
<tr><td>51</td><td>TOP SLP B</td><td>Slant B coefficient of drawing frame top</td><td>1A</td><td>1A</td></tr>
<tr><td>52</td><td>KEIKO R</td><td>Slant R coefficient of drawing frame fluorescent lamp</td><td>66</td><td>66</td></tr>
<tr><td>53</td><td>KEIKO B</td><td>Slant B coefficient of drawing frame fluorescent lamp</td><td>18</td><td>18</td></tr>
<tr><td>54</td><td>BOTTOM UP</td><td>Upper value of drawing frame bottom</td><td>8C</td><td>8C</td></tr>
<tr><td>55</td><td>BOTTOM DWN</td><td>Lower value of drawing frame bottom</td><td>6B</td><td>6B</td></tr>
<tr><td>56</td><td>MIDDLE UP</td><td>Upper value of drawing frame middle</td><td>B8</td><td>B8</td></tr>
<tr><td>57</td><td>MIDDLE DWN</td><td>Lower value of drawing frame middle</td><td>9F</td><td>9F</td></tr>
<tr><td>58</td><td>TOP UP</td><td>Upper value of drawing frame top</td><td>80</td><td>80</td></tr>
<tr><td>59</td><td>TOP DWN</td><td>Lower value of drawing frame top</td><td>66</td><td>66</td></tr>
<tr><td>5A</td><td>KEIKO</td><td>Lower value of output frame fluorescent lamp output</td><td>6C</td><td>6C</td></tr>
<tr><td>5B</td><td>KEIKO DWN</td><td>Lower value of drawing frame fluorescent lamp</td><td>5C</td><td>5C</td></tr>
<tr><td>5C</td><td>R TOP LMT</td><td>Upper value of drawing frame R</td><td>6C</td><td>6C</td></tr>
<tr><td>5D</td><td>R DWN LMT</td><td>Lower value of drawing frame R</td><td>20</td><td>20</td></tr>
<tr><td>5E</td><td>B TOP LMT</td><td>Upper value of drawing frame B</td><td>83</td><td>83</td></tr>
<tr><td>5F</td><td>B IN TOP</td><td>Upper value of INDOOR drawing frame B</td><td>67</td><td>67</td></tr>
<tr><td>60</td><td>B IN MAX</td><td>Upper value of INDOOR output frame B</td><td>5C</td><td>5C</td></tr>
<tr><td>61</td><td>B OUT MIN</td><td>Lower value of OUTDOOR output frame B</td><td>5C</td><td>5C</td></tr>
<tr><td>62</td><td>B OUT DWN</td><td>Lower value of OUTDOOR drawing frame B</td><td>4A</td><td>4A</td></tr>
<tr><td>63</td><td>B DWN LMT</td><td>Lower value of drawing frame B</td><td>20</td><td>20</td></tr>
<tr><td>64</td><td>ADJ BCONT</td><td>Direct output value (BLUE)</td><td>50</td><td>50</td></tr>
<tr><td>65</td><td>T M DIVID</td><td>Border between top and middle of drawing frame</td><td>5B</td><td>5B</td></tr>
<tr><td>66</td><td>B M DIVID</td><td>Border between middle and bottom of drawing frame</td><td>3C</td><td>3C</td></tr>
<tr><td>67</td><td>DELAY TIME</td><td>Auto white balance tracking speed<table><tr><th>Data</th><th>Mode.</th></tr><tr><td>0E</td><td>Normal</td></tr><tr><td>01</td><td>High speed tracking</td></tr></table></td><td>0A</td><td>0A</td></tr>
<tr><td>68</td><td>B IN MIN</td><td>INDOOR output frame B bottom</td><td>33</td><td>33</td></tr>
<tr><td>69</td><td>OUT HYS OFF</td><td>OUTDOOR hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>6A</td><td>OUT B HYS</td><td>OUTDOOR hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>6B</td><td>AWB MODE</td><td>Auto white balance adjustment mode<table><tr><th>Data</th><th>Mode</th></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment</td></tr><tr><td>F1</td><td>AWB all tracking</td></tr></table></td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (3).

Address	Name	Function [ ] contains the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
6C	IN B HYS	Indoor hysteresis amount (Blue)	04	04
6D	IN R HYS	Indoor hysteresis amount (Red)	02	02
6E	KAKE NORM R	ADD : 40 NORM R × 1000H	20	20
6F	KAKE NORM B	ADD : 41 NORM B × 1000H	02	02
70	AE FUNCTION 1	Switch for turning each AE function ON and OFF (1)	30	30
71	AE FUNCTION 2	Switch for turning each AE function ON and OFF (2)	10	10
72	AE REF H	Reference value for AE (Upper)	1B	1B
73	HIGHLIT LEVEL	High luminance modulation level setting	50	50
74	AE MIN L	MAX GAIN adjustment	2F	
75	AGC MIN	AGC MIN value (AGC reference value)	D4	D4
76	IRIS MIN H	Iris limit value (Upper)	40	40
77	AE MAX	AE level max limiter	A0	A0
78	YAKEI LEVEL	YAKEI mode AGC max limiter	40	40
79	JITEISU DOWN	Constant during loop response DOWN side	28	28
7A	JITEISU UP	Constant during loop response UP side	0D	0D
7B	ORETEN SET	Variable point due to time constant error amount	13	13
7C	OMOMIWAKU 0	Weighting by changing to three frames (Upper frame)	40	40
7D	OMOMIWAKU 1	Weighting by changing to three frames (Surrounding frame)	FF	FF
7E	AFC WIDE	Coefficient required for the ANF integral loop	03	03
7F	AFC GAIN	Loop gain of the flicker less loop	01	01
80	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
81	DELTA GAIN	Gain smoothing value	08	08
82	ZOOM DROP 1	F-No. dropping (1) by Zoom lens	AE	AE
83	ZOOM DROP 2	F-No. dropping (2) by Zoom lens	41	41
84	HIST P KEISU	Histocomp level setting P for counter light determination	40	40
85	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
86	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
87	FUZZY JITEISU	Constant during auto back light response	08	08
88	BAIRITSU P	Magnification setting of required for HIST P	80	80
89	FUZZY DATA 1	Exposure correction data 1	90	90
8A	FUZZY DATA 2	Exposure correction data 2	C0	C0
8B	FUZZY DATA 3	Exposure correction data 3	B0	B0
8C	FUZZY DATA 4	Exposure correction data 4	A0	A0
8D	FUZZY DATA 5	Exposure correction data 5	80	80
8E	FUZZY DATA 6	Exposure correction data 6	A0	A0
8F	FUZZY DATA 7	Exposure correction data 7	98	98
90	FUZZY DATA 8	Exposure correction data 8	90	90
91	FUZZY DATA 9	Exposure correction data 9	60	60
92	FUZZY DATA 10	Exposure correction data 10	40	40
93	HIGHLIT START	Setting of high luminance modulation start	58	58
94	HIGHLIT END	Setting of high luminance modulation stop	88	88
95	IRIS OFFSET	Iris ROM table open side offset	28	28
96	IRIS PWM BIAS	Adjusting for IRIS PWM BIAS	F8	F8
97	AGC AMP BIAS	Adjusting for AGC AMP BIAS	FE	FE

Table 7-2 (4).

Address	Name	Function [ ] contains the adjustment voltage output terminal	Adjustment data Initial value	 Memo column
98	WIDE H	Zoom wide end upper Flange back adjustment	03	
99	WIDE L	Zoom wide end lower	26	
9A	TELE H	Zoom tele end upper	1C	
9B	TELE L	Zoom tele end lower	B5	
9C	FOCUS H	Focus offset upper	11	
9D	FOCUS L	Focus offset lower	03	
9E	ZM HYS	Zoom speed hysteresis	00	00
9F	ADJ LENZ		02	02
A0	REST WIDE	Zoom limiter WIDE side	20	20
A1	REST TELE	Zoom limiter TELE side	10	10
A2	NEAR LIM	Focus near limit	60	60
A3	LANC ZM SPD	Lanc zoom speed	F0	F0
A4	VAR ZM SPD H	Variable zoom speed	EA	EA
A5	VAR ZM SPD L	Variable zoom speed	A8	A8
A6	STOP DEAD ZONE	Dead zone amount for the absolute value control	04	04
A7	ZM SPD LMT	Zoom speed (Limit)	0B	0B
A8	ZM SPD MAX	Zoom speed (Maximum)	38	38
A9	ZM MOTOR STOP	Zoom motor stop	15	15
AA	PULSE SPD MAX	Maximum zoom pulse value	09	09
AB	ADJ0	For adjusting (ZOOM OFF MODE) Data — Mode FB — Normal 01 — Zoom position fixed	FB	FB
AC	ADJ1	For adjusting (WND A)	1E	1E
AD	ADJ2	For adjusting (WND B)	5A	5A
AE	ADJ3	For adjusting	00	00
AF	AF0	Noise threshold	55	55
B0	AF ID	AF ID for testing	00	00
B1	AF WIND	AF frame for testing	00	00
B2	HBG REF	High luminance gate level	FA	FA
B3	AGC REF 1	AGC gain 1	04	04
B4	AGC REF 2	AGC gain 2	05	05
B5	AGC REF 3	AGC gain 3	12	12
B6	HOLE REF 1	Hole data close	A5	A5
B7	HOLE REF 2	Hole data middle	96	96
B8	HOLE REF 3	Hole data open	76	76
B9	IIR K	IIR filter coefficient	03	03
BA	B NOISE	Base noise level	30	30
BB	GATE THR	Noise threshold	55	55
BC	HB THR	High luminance threshold (HB)	80	80
BD	HBFH THR	High luminance threshold (fh)	40	40
BE	TEST WOB	Wobbling amplitude for testing	FF	FF
BF	WOB LIMIT	Wobbling amplitude limit	06	06

Table 7-2 (5).

Address	Name	Function [ ] contains the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
C0	SHIND THR	Depth of focus THR	0C	0C
C1	SPD UP 0	Speed up value (No. -1)	01	01
C2	SPD UP 1	Speed up value (No. -2)	01	01
C3	WOB DET SW	Wobbling detect filter switch	00	00
C4	STEP LIM	Speed limit value	0A	0A
C5	YAMA SW	Climbing switch	00	00
C6	SPD THR	Speed THR	06	06
C7	YAMA THR	Climbing THR	50	50
C8	AF SPD	Speed offset	01	01
C9	TEST SPD	Speed for testing	FF	FF
CA	WOB AMP	Wobbling amplitude offset	02	02
CB	MODE SW	Test mode switching	FF	FF
CC	SPD OFFSET 1	Speed offset up value 1	01	01
CD	SPD OFFSET 2	Speed offset up value 2	01	01
CE	AF FADE SW	Fader AF mode	01	01
CF	IRIS THR		00	00
D0	V SENSOR GAIN	PITCH adjustment gain	88	
D1	H SENSOR GAIN	YAW adjustment gain	64	
D2		Not used	00	00
D3	V LIMIT 1	PITCH initial limiter	FF	FF
D4	V LIMIT 2	Loop limiter in PITCH integral	7F	7F
D5	V CORE VALUE	PITCH core ring	10	10
D6	VK HPF	PITCH HPF feedback coefficient	FF	FF
D7	H LIMIT 1	YAW initial limiter	FF	FF
D8	H LIMIT 2	Loop limiter in YAW integral	7F	7F
D9	H CORE VALUE	YAW core ring	10	10
DA	H K HPF	YAW HPF feedback coefficient	FF	FF
DB	K TABLE	PITCH and YAW integral feedback coefficient table	04	04
DC	V REF CENTER L	PITCH PWM center value (lower 8 bit)	00	00
DD	V REF CENTER H	PITCH PWM center value (upper 8 bit)	08	08
DE	H REF CENTER L	YAW PWM center value (lower 8 bit)	00	00
DF	H REF CENTER H	YAW PWM center value (upper 8 bit)	08	08
E0	STILL THR	Discrimination poin due to still and deflation	80	80
E1	V CORE STILL	Still core ring value (Vertical)	40	40
E2	H CORE STILL	Still core ring balue (Horizontal)	40	40
E3	V PAN JDG TERM		80	80
E4	V PAN THR		0B	
E5	V PAN THR ADJ		79	79
E6	H PAN JDG TERM		80	80
E7	H TILT THR		0B	
E8	H TILT THR ADJ PAN TILT DET ON		00	
E9			00	
EA			00	
EB			00	
EC			00	

Table 7-2 (6).

Address	Name	Function [ ] contains the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
ED			00	
EE			00	
EF			00	
F0		Column for inputting unit's ID No, etc. Not related to unit's operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (7).

1-1-6. Page 6, Page 2 Address List

The camera adjustment mode can be set by setting the data in the following table to page 6 or 2. (The data of these pages can be set temporarily. When the main power supply (7.5V) is turned off, the original values (normal value) are returned. Therefore, these adjustment modes can be released easily by turning off the main power supply.)

(Example) By setting data: 01 to page:6, address: 00, the write protect of page F, addresses 01 to EF can be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Page F protect	00	Normal (Protect released)
		01	Protect release of address 01 to EF of Page F
01	Camera adjustment switch **Note:** To execute this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote commander after setting the data.	00	Normal
		01	IRIS OPEN, AGC HOLD
		03	IRIS CLOSE1, AGC HOLD
		09	ND0.5 SHUTTER (PAL=1/160, NTSC=1/190)
		0B	ND0.8 SHUTTER (PAL=1/320, NTSC=1/380)
		0D	AWB PRESET1: 3200K PRESET DATA input
		0F	WB 3200K PRESET: Indoor white balance mode
		11	AWB PRESET2: 3200K PRESET DATA input preparations
		13	Flange back adjustment preparations
		15	Flange back adjustment execution
		17	1/2000 shutter mode
		19	MAX GAIN adjustment mode
		2D	EEPROM PRE WRITE: Page F, page E initial data writing
02	DDS display switching	00	Normal
		02	Color difference data display
		03	HALL DATA display
		04	R ratio display
		05	B ratio display
		0C	Auto focusing display (01: Focusing, 00: Not focusing)
		0E	Light level display
03	Weighting on/off	00	Weighting off
		10	Normal (Weighting on)
10	Camera control microprocessor version	20	Version 2 (SC424605FU5 : VC-132 board IC 653)
11	Page F data initialization completed display	00	Normal (Data can be initialized)
		01	Data initialized
12	Shutter mode	00	Normal
		19	1/4000 shutter mode
21	Flange back adjustment completed display	00	Normal (Flange back adjustable)
		01	Flange back adjusted
30	VAP control microprocessor version	10	Version 1 (CXP80620A-020R : VC-132 board IC745)

Table 7-3.

2. Page 2

Category	Address	Adjustment Mode	Data	Function
01	37	VH address L		Title horizontal/vertical position (L)
01	38	VH address H		Title horizontal/vertical position (H)
01	39	Data transmission to SG	00 01	Normal Data transmission to SG begins
01	3D	Character generator oscillation mode	01 others	Continuous oscillation mode Normal
FF	E3	Mode control microprocessor version	01	Version 1 (MB89092PFV-G-128: VC-132 board IC902)

Note: The category is specified by the data of page 2, address 00.
(Example) To specify category 01, adjust to 01 the data of page 2, address 00.

Table 7-4.

1-1-7. Date Processing

For some adjustments, the DDS display and the display data of the adjusting remote commander (hexadecimal numeral) must be calculated in order to obtain the adjustment data. In this case, after converting the hexadecimal numeral to a decimals numeral once, calculate and convert the result to a hexadecimal numeral, and use it as the adjustment data. Table 7-5 is the hexadecimal-decimal calculation table.

Hexadecimal-Decimal Conversion Table

The lower digits of the hexadecimal / The upper digits of the hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① → B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) contains the display of the adjusting remote commander.

(Example) When the DDS display or the display of adjusting remote commander is BD (b d).
As the upper digit of the hexadecimal numeral is B(b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the decimal numeral to be calculated.

Table 7-5.

1-2. CAMERA SYSTEM ADJUSTMENTS

1. Adjusting points when replacing main parts

When replacing the CCD imager or lens block, adjust the items indicated by ○ in the following table.

	When CCD imager is replaced	**When lens block is replaced**
V SUB adjustment	○	
V RG adjustment	○	
HALL adjustment		○
CCD imager correction data writing	○	
Flange back adjustment	○	○
IRIS IN/OUT adjustment	○	○
MAX GAIN adjustment	○	
Auto white balance balance reference data input	○	
Auto white balance adjustment	○	
Color reproductivity adjustment	○	

2. Power supply voltage check (DD-62 board)

Subject	Arbitrary
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑤ and ⑥ of CN451
Specified value	4.90 ± 0.15 Vdc
D4V check	
Measurement point	Pin ③ of CN451
Specified value	3.80 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pin ① of CN451
Specified value	4.85 ± 0.15 Vdc
15V check	
Measurement point	Pin ④ of CN451
Specified value	15.0 ± 0.4 Vdc
–8.5V check	
Measurement point	Pin ② of CN451
Specified value	–8.5 ± 0.5 Vdc

Checking Method:

1) Check that each power supply voltage satisfies the specified value.
   If not, refer to “Video circuit, Power supply block adjustment”.

3. Page F data initialization

Note: If the page F data has been initialized, all adjustments of the camera section must be carried out again.

Initializing method:

Order	Page	Address	Data	Procedure	Conditions
1				Turn off/on the main power supply (7.5V)	
2	**6**	**00**	**01**	**Releasing of protect.**	
3	6	11		Check that the data is 00. (Display indicating that page F data can be initialized.)	
4	6	01	2D	Press the PAUSE button. (Initializing the page F data. The data of addresses 01 to EF of page F will be initalized.)	
5	6	11		Check that the data is 01. (Display of data initialized.)	

Note: Initialize page F only when the nonvolatile memory (VC-132 board IC641 EEPROM) has been replaced.

Processing after initializing

Order	Page	Address	Data	Procedure	Conditions
1	6	01	00	Press the PAUSE button. (Releasing of initialization mode)	
2				After " Page F Data Modifications ", carry out all adjustments of the camera section.	

Related Adjustments:

All camera adjustments of the camera section excluding " 28 MHz origin oscillation adjustment ".

4. Page F data modification

Some parts of the data (initial data) automatically written on page F by the initialization of the page F data will difer according to the version of the camera micro processor. Change the data manually, and arrange it.

Modification method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of page F protect.**	
2	F	00 (SET ID)	53	Set each data to each address, and press the PAUSE button.	
		01 (NT PAL)	41		
		08 (V REF Y)	6A		
		09 (V REF C)	58		
		10 (CORE OTHER)	54		
		16 (CORE BURST LEVEL)	38		
		18 (CORE Y SET UP)	02		
		1C (CORE R Y 3200 GAIN)	4F		
		1D (CORE B Y 3200 GAIN)	2A		
		67 (DELAY TIME)	0A		
		70 (AE FUNCTION 1)	02		
		79 (JITEISU DOWN)	28		
		7A (JITEISU UP)	0D		
		C0 (SHIND THR)	0C		

Remarks: The versions of the camera micro processor (VC-132 board IC653) and the VAP micro processor (VC-132 board IC745) can be distinguished using the following table.

- **Camera control microprocessor**

Page	Address	Data	
6	10	30	Version 3

- **VAP control microprocessor**

Page	Address	Data	
6	30	20	Version 2

5. 28 MHz original oscillation adjustment (VC-132 board)

Purpose: Adjusts 28 MHz original oscillation for synchronizing clock.

Adjustment error: Loss of synchronization or loss of color.

Subject	Not required
Measurement Point	Pin (57) of IC602 (CL)
Measuring Instrument	Frequency counter
Adjusting Element	CT601
Specified Value	14187500 ± 71Hz

Adjusting method:

Order	Adjusting element	Procedure	Conditions
1	CT601	Adjust the oscillation frequency to the specified value.	

6. V SUB adjustment (VC-132 board)

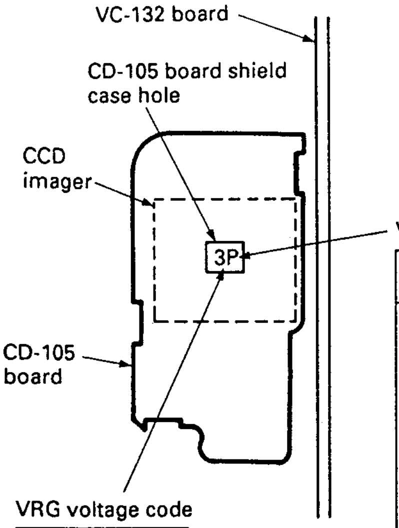
Purpose: Sets V SUB voltages for the specific CCD unit.
Adjustment error: Smear or coarse picture.

Subject	Not required
Adjustment Page	F
Adjustment Address	06 (V SUB)

Related Adjustments:
"MAX gain adjustment", "Auto white balance reference data input", "Auto white balance adjustment", "Color reproductivity adjustment".

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	F	06		Reading a voltage code of V SUB indicated by CCD imager then input data of a table (Fig. 7-7.).	
3	F	06		Press the PAUSE button.	



VRG voltage code

Code	Data
1	34
2	4E
3	69
4	83
5	9E
6	B9
7	D3

VSUB voltage code

Code	Data
E	71
F	77
G	7D
H	83
J	89
K	8F
L	95
M	9B
N	A1
P	A7
Q	AD
R	B3
S	B9
T	BF
U	C5
V	CB
W	D1
X	D7
Y	DD
Z	E3

Fig. 7-7.

7. VRG adjustment (VC-132 board)

Purpose: See Camera Overall Adjustment Procedure
Adjustment error: No picture at low illumination (dark)

Subject	Not required
Adjustment Page	F
Adjustment Address	07 (V PGH)

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	F	07		Reading a voltage code of VRG indicated by CCD imager then input data of a table (Fig. 7-7.).	
3	F	07		Press the PAUSE button.	

8. CCD Imager correction data writing

Subject	Not required
Adjustment Page	F
Adjustment Address	1F to 2E (CCD-DEFECT)

Write the CCD imager correction data in the following cases.

1. When the CCD imager has been replaced
2. When the camera EEPROM (VC-132 board IC641) has been replaced
3. When the page F data has been initialized

In the case of 1, as the CCD imager for repair does not require the correction data, adjust the data of addresses 1D to 2C of page F and those of addresses E0 to EF of page D to "00".

Writing method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of page F protect.**	
2	F	1F~2E		Set data 00 to each address, and press the PAUSE button.	
3	**1**	**00**	**01**	Releasing of page D protect.	
4	D	E0~EF		Set data 00 to each address, and press the PAUSE button. (Writing the backup data)	

In the case of 2 and 3, read the CCD imager correction data written on addresses E0 to EF in page D and write them in addresses 1F to 2E.

Writing method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of page F protect.**	
2	D	E0~EF		Read the CCD imager correction data.	
3	F	1F 20 21 ⋮ 2E		Set the data of address E0 of page D, and press the PAUSE button. Set the data of address E1 of page D, and press the PAUSE button. Set the data of address E2 of page D, and press the PAUSE button. ⋮ Set the data of address EF of page D, and press the PAUSE button.	

9. HALL adjustment

Purpose: Variation of the HALL element outputs is removed by adjusting amp gain and offset. HALL elements detect the lens iris position.

Adjustment error: Oscillation of iris, or incorrect white balance at indoor = outdoor.

Subject	Not required
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0A (HALL GAIN) 0B (HALL OFFSET)
Specified Value	33 to 37 during IRIS OPEN B7 to BB during IRIS CLOSE

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	6	02	03	Set the HALL DATA display mode.	
3	6	01	03	Press the PAUSE button. (Setting the IRIS CLOSE mode)	
4	F	0B	80	Press the PAUSE button. (HALL OFFSET data initial setting)	
5	F	0A	40	Read the DDS display data (Note 1) and take it as W2.	IRIS CLOSE mode
6	F	0A	30	Read the DDS display data and take it as W1.	IRIS CLOSE mode
7	6	01	01	Press the PAUSE button. (Setting the IRIS OPEN mode)	
8	F	0A	30	Read the DDS display data and take it as K1.	IRIS OPEN mode
9	F	0A	40	Read the DDS display data and take it as K2.	IRIS OPEN mode
10				Convert W1, W2, K1, K2 to decimal numerals, and obtain W1′, W2′, K1′, K2′. **(Refer to Table 8-5.** "Hexadecimal-Decimal Conversion Table")	
11				Calculate X1′ using the following equations (Decimal calculation). $A'=W2'+K1'-W1'-K2'$ ·········· Equation 1 $B'=W1'-K1'$ ···················· Equation 2 $X1'=\frac{2128+(48\times A')-(16\times B')}{A'}$ ······ Equation 3	
12				Convert X1′ to a hexadecimal numeral, and obtain X1. (Round off to a whole number)	
13	F	0A		Set the data to X1 (obtained at step 12).	
14	F	0A		Press the PAUSE button.	
15	F	0B		Change the data with the PLAY and STOP buttons, and adjust the DDS display data to 35.	IRIS OPEN mode
16	F	0B		Press the PAUSE button.	
17	6	01	03	Press the PAUSE button. (Setting the IRIS CLOSE mode)	
18				If the DDS display data is B7 to BB, it indicates the end of adjustments. Perform "Processing after Adjustments". If not, carry out step 19 onwards with the DDS display data as W0.	IRIS CLOSE mode

Note 1: Lower 2 digits of the data displayed at the bottom right of the EVF or TV monitor.

Order	Page	Address	Data	Procedure	Conditions
19				Convert W0 to a decimal numeral, and obtain W0′.	
20				Calculate X2′ using the following equations (decimal numeral calculation). $C'=W0'-B'-53$ ···················· Equation 4 $X2'=\frac{(133-B')\times(X1'-48)+48\times C'}{C'}$ ···· Equation 5 (X1′ and B′ are values obtained from equations 2 and 3 at step 11)	
21				Convert X2′ to a hexadecimal numeral, and obtain X2. (Round off to a whole number)	
22	F	0A		Set the data to X2 (obtained at step 21).	
23	F	0A		Press the PAUSE button.	
24	F	0B		Change the data with the PLAY and STOP buttons, and adjust the DDS display data to BA.	IRIS CLOSE mode
25	F	0B		Press the PAUSE button.	
26	6	01	01	Press the PAUSE button. (Setting the IRIS OPEN mode)	
27				Check that the DDS display data is 33 to 37.	IRIS OPEN mode

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	02	00	Releasing of HALL DATA display mode.	
2	6	01	00	Press the PAUSE button. (Releasing the IRIS CLOSE/OPEN mode)	

Related Adjustments:
"IRIS IN/OUT adjustment".

10. Flange back adjustment

Purpose: Automatic flange back adjustment of inner focus lens
Adjustment error: Loss of focus when switched between auto focus and manual focus

Subject	Chart for flange back adjustment (Placed 2000 ± 5 mm in front of the lens Illuminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	98 (WIDE H), 99 (WIDE L), 9A (TELE H), 9B (TELE L), 9C (FOCUS H), 9D (FOCUS L)

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2				Check that the center of the flange back adjustment chart coincides with that of the exposure display at both the zoom lens TELE end and the WIDE end.	
3	6	21		Check that the data is 00. (Flange back adjustable display)	
4	6	01	13	Press the PAUSE button.	
5	6	01	15	Press the PAUSE button. (This enables adjustments to be carried out automatically. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 98 to 9D.)	
6	6	21		Check that the data is 01. (Display indicating that flange back adjustment has completed.)	

Processing after Adjustments:

Order	Procedure
1	Turn on the main power supply (7.5V) (Out of focus if this is not carried out.)

11. Flange back check

Subject	Siemens star (Placed 2m in front of the lens)
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Specified Value	$D_2=D_1\pm3$

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1				Place the Siemens star 2m in front of the lens.	
2				To open the IRIS, decrease the luminous intensity to the siemens star up to a point before noise appears on the image displayed on the monitor TV screen.	
3				Expose the Siemens star at the TELE end.	
4				Press the "Focus" button, and turn on the auto focus.	
5	6	02	0C	Check that the DDS display is 00 0001. (Focusing check)	Auto focus on
6				Press the "Focus" button and turn off the auto focus.	
7				Expose the simens star at the WIDE end.	
8	**6**	**00**	**01**	**Releasing of protect.**	
9	6	02	00		
10	F	02	B8	Press the PAUSE button. (Setting the focus position display mode)	
11				Read the DDS display data (4 digits) and take it as D_1.	Zoom WIDE end Auto focus off
12				Press the "Focus" button, and turn on the auto focus.	
13	6	02	0C	Check that the DDS display is 00 0001. (Focusing check)	Auto focus on
14	6	02	00	Read the DDS display (focus position display) data and take it as D_2.	Zoom WIDE end Auto focus on Focusing condition
15				Check that $D_2=D_1\pm3$.	

Checking method:

Order	Page	Address	Data	Procedure
1	F	02	00	Press the PAUSE button. (Releasing the focus position display mode)

12. SYNC level check (VC-132 board)

Subject	Not required
Measurement Point	Pin ⑧ of CN641 (Y OUT)
Measuring Instrument	Oscilloscope
Specified Value	A=150 ± 10mV

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	6	01	03	Press the PAUSE button. (Setting the IRIS CLOSE mode)	
3				Check that the SYNC level to the specified value.	IRIS CLOSE mode

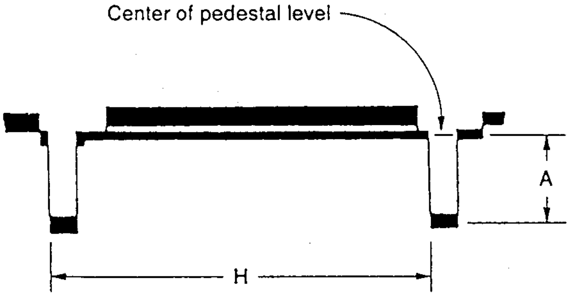


Fig. 7-8.

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	01	00	Press the PAUSE button. (Releasing the IRIS CLOSE mode)	

13. Burst level check (VC-132 board)

Subject	Not required
Measurement Point	Pin ⑥ of CN651 (C OUT)
Measuring Instrument	Oscilloscope
Specified Value	A=150 ± 15 mVp-p

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	6	01	03	Press the PAUSE button. (Setting the IRIS CLOSE mode)	
3				Check that the SYNC level to the specified value.	IRIS CLOSE mode

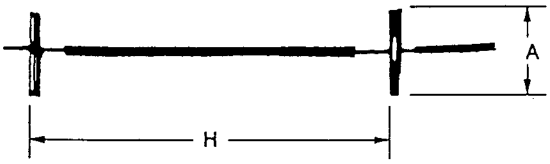


Fig. 7-9.

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	01	00	Press the PAUSE button. (Releasing the IRIS CLOSE mode)	

Related Adjustments:
"Color reproductivity adjustment".

14. Picture frame setting

Purpose: A step of adjustment preparation procedure
Adjustment error: Only for adjustment

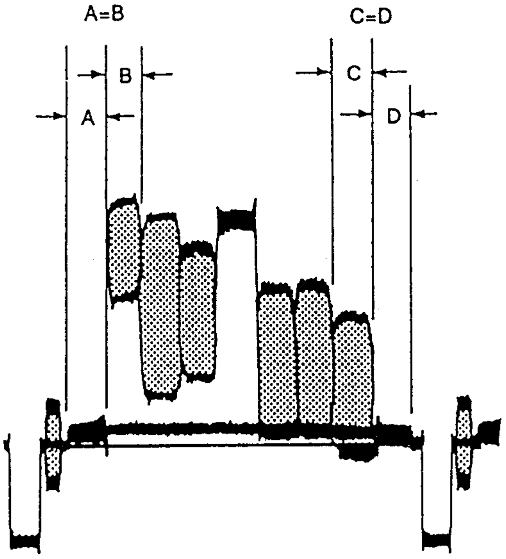
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec.

Setting method:

Order	Procedure
1	Turn off the auto focus.
2	Adjust the focus using the focus knob.
3	Adjust the direction of the zoom and camera, and set at the specified position.
4	Mark the position of the picture frame on the monitor display, and adjust it to this position if the "color bar chart standard picture frame" or "white pattern standard picture frame" is used in the following adjustments.

Checking with the oscilloscope

1. H cycle



2. V cycle

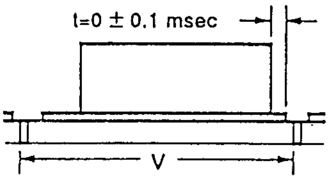


Fig. 7-10.

Checking on the TV monitor (Under scan mode)

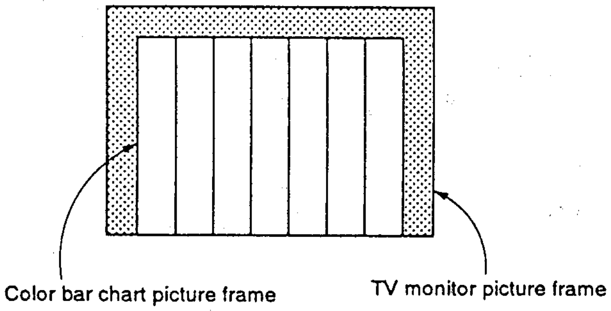


Fig. 7-11.

15. IRIS IN/OUT adjustment

Purpose: Measure the light level and write into EE PROM for indoor/outdoor identification in auto white balance.

Adjustment error: Incorrect white balance (not standard)

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV
Measuring Instrument	monitor
Adjustment Page	F
Adjustment Address	44 (IRIS IN) 45 (IRIS OUT)

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	6	02	0E	Setting of light level display mode.	
3	6	01	0B	Press the PAUSE button. (Setting the ND 0.8 shutter mode)	
4				Read the data of the DDS display data, and take it as D_1.	ND 0.8 shutter mode
5				Convert D_1 to decimal numerals to obtain D_1'. (Refer to table 8-5 "Hexadecimal-Decimal Conversion Table")	
6				Calculate D_2' from the following equations (Decimal numeral calculation). $D_2' = D_1' - 5584$	
7				Convert D_2' to hexadecimal numerals to obtain D_2. Read the upper 2 digits of D_2, and take it as D_{44}.	
8	F	44		Adjust the data to D_{44} (obtained at step 7) with the PLAY and STOP buttons.	
9	F	44		Press the PAUSE button.	
10	6	01	09	Press the PAUSE button. (Setting the ND 0.5 shutter mode)	
11				Read the data of the DDS display data, and take it as D_3.	ND 0.5 shutter mode
12				Convert D_3 to decimal numerals to obtain D_3'.	
13				Calculate D_4' from the following equations (Decimal numeral calculation). $D_4' = D_3' - 3568$	
14				Convert D_4' to hexadecimal numerals to obtain D_4. Read the upper 2 digits of D_4, and take it as D_{45}.	
15	F	45		Adjust the data to D_{45} (obtained at step 14) with the PLAY and STOP buttons.	
16	F	45		Press the PAUSE button.	

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	02	00	Releasing of light level display mode.	
2	6	01	00	Press the PAUSE button. (Releasing the ND 0.5 shutter mode.	

16. Max gain adjustment (VC-132 board)

Purpose: Variation of the minimum illumination among units is removed.

Adjustment error: No picture at low illumination (dark)

Subject	White pattern standard picture frame
Measurement Point	Pin ⑧ of CN641 (Y OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	74 (AE MIN L)
Specified Value	A=260 ± 10mV or AC to B4

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	6	01	19	Press the PAUSE button. (Max gain adjustment mode)	
3	F	74		Change the data with the PLAY and STOP buttons, and adjust the CAM Y signal level (A) to the specified value.	MAX GAIN adjustment mode
4	F	74		Press the PAUSE button.	

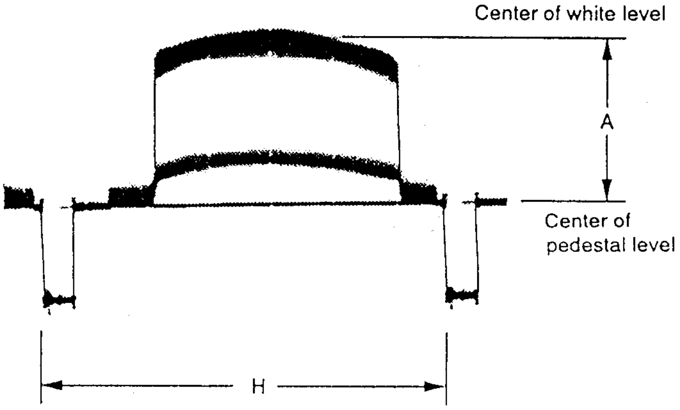


Fig. 7-12.

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	01	00	Press the PAUSE button. (Releasing the max gain adjustment mode)	

17. Auto white balance reference data input

Subject	White pattem standard picture frame
Adjustment Page	F
Adjustment Address	38 (RG3200H), 39 (RG3200L), 3A (BG3200H), 3B (BG3200L)

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1				Turn off/on the main power supply (7.5V).	
2	**6**	**00**	**01**	**Releasing of protect.**	
3	6	11		Check that the data is 00. (Display indicating that auto white balance reference data can be input)	
4	6	01	11	Press the PAUSE button. (Auto white balance reference data input preparation mode)	
5	6	01	0D	Press the PAUSE button. (The auto white balance reference data input will be executed and the data input automatically to addresses 38 to 3B of page F.)	
6	6	11		Check that the data is 01. (Display indicating that the auto white balance reference data input completed)	

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	01	00	Press the PAUSE button. (Releasing the auto white balance reference data input mode)	
2				Perform "Auto White Balance Adjustment".	

Related Adjustments:
"Auto White Balance Adjustment".

18. Auto white balance adjustment

Purpose: Adjusts for correct auto white balance.

Adjustment error: Poor color reproduction of auto white

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	40 (NORM R), 41 (NORM B)
Specified Value	R ratio 2A80 ± 40 B ratio 5E80 ± 40

Note: Perform this adjustment after "Auto White Balance Reference Data Input".

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	F	6B	D0	Press the PAUSE button. (Setting the auto white balance adjustment mode)	
3	6	02	04	Setting of R ratio display mode.	
4	F	40		Change the data with the PLAY and STOP buttons, and adjust the R ratio data of the DDS display to the specified value.	R ratio display mode
5	6	02	05	Setting of B ratio display mode.	
6	F	41		Change the data with the PLAY and STOP buttons, and adjust the B ratio data of the DDS display to the specified value.	B ratio display mode
7	F	41		Press the PAUSE button.	

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	F	6B	00	Press the PAUSE button. (Releasing the auto white balance adjustment mode)	
2	6	02	00	Releasing of B ratio display mode.	

19. White balance check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filters 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	**Fig. 7-13 A to C**

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1				Check that the lens is not covered with either filter.	
2	**6**	**00**	**01**	**Releasing of protect.**	
3	6	01	0F	Press the PAUSE button. (Setting the WB 3200K preset mode)	
4				Check that the white luminance point is within the circle shown in **Fig. 7-13. A.** (Setting the indoor white balance mode)	WB 3200K preset mode, no filter
5	6	01	00	Press the PAUSE button. (Releasing WB 3200K preset mode)	
6	F	67	01	Press the PAUSE button. (Setting the auto white balance high speed tracking mode)	
7				Check that the white luminance point is within the circle shown in **Fig. 7-13. A.**	Auto white balance high speed tracking mode, no filter
8				Place the C14 filter on the lens.	
9				Check that the white luminance point is within the circle shown in **Fig. 7-13. B.** (Checking the auto white balance outdoor mode)	Auto white balance high speed tracking mode, C14 filter
10				Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) over the lens.	
11				Check that the white luminance point is within the circle shown in **Fig. 7-13. C.** (Checking the auto white balance outdoor mode)	Auto white balance high speed tracking mode, ND filter 1.3

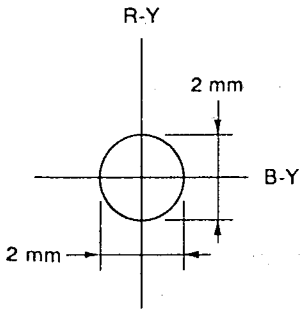


Fig. 7-13.A

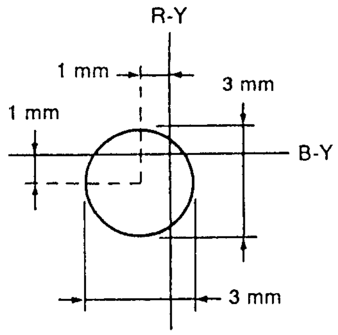


Fig. 7-13.B

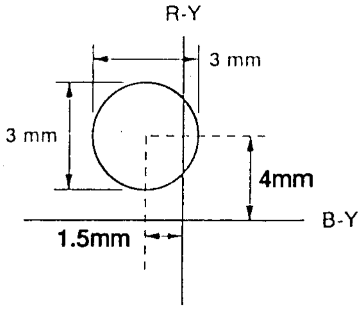


Fig. 7-13.C

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	F	67	0E	Press the PAUSE button. (Releasing the auto white balance high speed tracking mode)	

20. Color reproductivity adjustment

Purpose: Adjusts the 3 primary color matrix for correct color reproduction.

Adjustment error: Poor color reproduction

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	14 (CORE MAT R) 15 (CORE MAT B) 1A (CORE B-Y HUE) 1B (CORE R-Y)
Specified Value	Each color luminance point should be within each color reproduction frame.

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**6**	**00**	**01**	**Releasing of protect.**	
2	6	03	00	Setting of weighting off mode.	
3	F	3E	00	Press the PAUSE button. (Setting the WB 3200K preset mode)	
4	F	6B	F1	Press the PAUSE button. (Setting the AWB all tracking mode.)	
5	F	14 15 1A 1B		Change the data, and settle red and yellow color luminance point in each color reproduction adjustment frame. Press the PAUSE button for each address.	

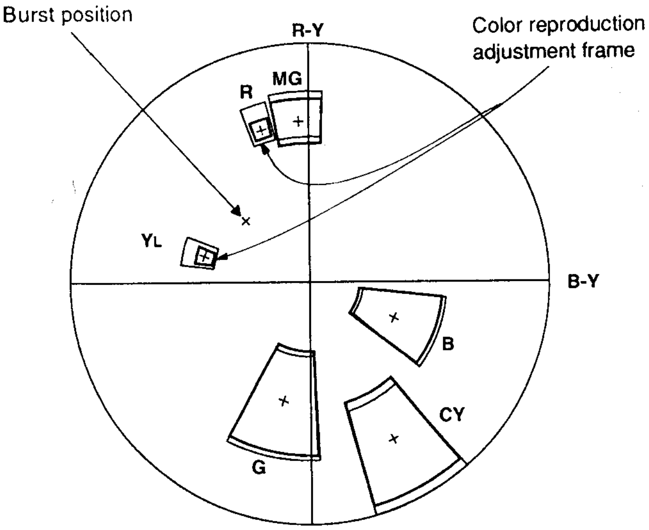


Fig. 7-14.

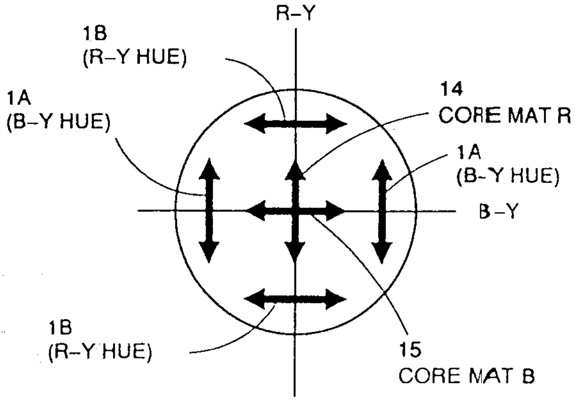


Fig. 7-15. Direction of the Movements of Adjustment Addresses and Luminance Points

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	F	6B	00	Press the PAUSE button. (Releasing the AWB all tracking mode)	
2	F	3E	12	Press the PAUSE button. (Releasing the WB 3200K preset mode)	
3	6	03	10	Set the normal mode (weighting on mode).	

21. PAN TILT DETECT ADJUSTMENT

Subject	
Measurement Point Measuring Instrument	DDS display of EVF or TV monitor
Adjust Page	F
Adjust Address	E4 (V PAN THR) E7 (H TILT THR)
Specified Value	

Adjusting methed:

Order	Page	Address	Data	Procedure	Conditions
1	6	00	01	Releasing of protect.	
2	6	02	OF	Set the PITCH DATA display mide. Read the DDS display data and take it as PD.	
3	6	02	10	Set the YAN DATA display made. Read the DDS display data and take it as YD.	
4				Calculate PT and YT using the following equations. $PT=20_H + \lvert 79_H - PD_H \rvert$ $YT=1E_H + \lvert 79_H - YD_H \rvert$	
5	F	E4		Set the data to PT.	
6	F	E7		Set the data to YT.	

22. VAP UNIT ADJUSTMENT

Subject	
Measurement Point Measuring Instrument	video output terminal Oscilloscope and TV monitor.
Adjust Page	F
Adjust Address	D0 (PITCH GAIN) D1 (YAW GAIN)
Specified Value	Horizontal residual vibration ≦ 1.5 μsec Vertical residual vibration ≦ 0.75msec

Adjusting methed:

Order	Page	Address	Data	Procedure	Conditions
	6	00	01	Releasing of protect.	
	F	E9	01		
				Move the vibration table in a sine-wave pattern at 7.0 ± 0.1Hz so that the chart moves on monitor 10 μsec p-p horizontally and 4.5 msec p-p vertically.	
	F	D0		If this amount of vibration cannot be correctly generated, memorize the amount of horizontal and vertical vibration as SH and SV.	
	F	D1		Adjust data so that the vertical direction residual vibration is minimum.	
				Adjust data so that the horizontal direction residual vibration is minimum.	

1-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS
(E, Australian, Tourist model)

Note 1: The backlight (fluorescent tube) is driven by a 800 Vp-p, 16 kHz AC power supply.
Therefore, be careful not to touch the backlight holder as you will receive an electric shock.

Note 2: When replacing the LCD unit, ensure there will be no damages by static electricity.

[Adjusting connector]

Most measuring points for adjusting the view-finder are concentrated at CN801 of the VF-68P board. Connect the measuring equipments via the measuring pin tool. The following table lists the pin numbers and signal names of CN801.

Pin No.	Signal Name	Pin No.	Signal Name
1	LC COM	2	EVF GND
3	G OUT	4	13.5V
5	SELFR	6	12V
7	R OUT	8	B OUT
9	BRIGHT	10	PCO

Table 7-5-1.

Measuring pin tool	Parts Code: J-6082-192-A

[Positions of RVs during adjustments]

Unless specified otherwise, set RVs to the following positions and adjust.

RV953 (BRIGHT)········ Refer to "BRIGHT Adjustment"
RV954 (COLOR)·········· Mechanical center
RV955 (HUE)·············· 20 °± 10 ° from the mechanical center in the counterclockwise (○)

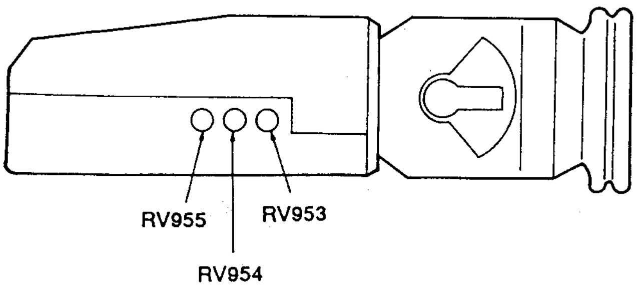


Fig. 7-16.

[Power Supply Voltage]

Adjust the power suplly voltage for the battery pin so that Pin ① (EVF UNREG) of CN951 of the VF-69P board becomes 6.0 ± 0.1 Vdc.

[Connecting the Pattern Generator]

Connect the pattern generator as shown Fig. 7-17.

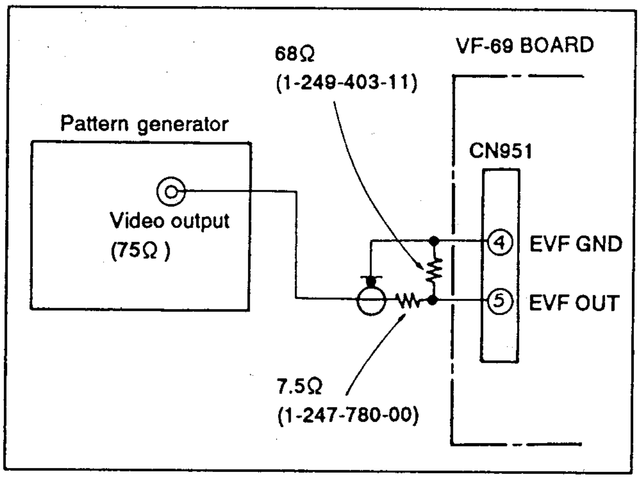


Fig. 7-17.

[Video Input Signal for Adjusting]

If the signal column specifies "Color bar signal whose chroma signal and burst signal are turned off", input a color bar signal whose chroma signal and burst signal have been turned off to the video input pin as the video input signal for adjusting. Check that the signal level of Pin ⑤ of CN951 of the VF-69 board is 0.9 ± 0.12 Vp-p before adjusting.

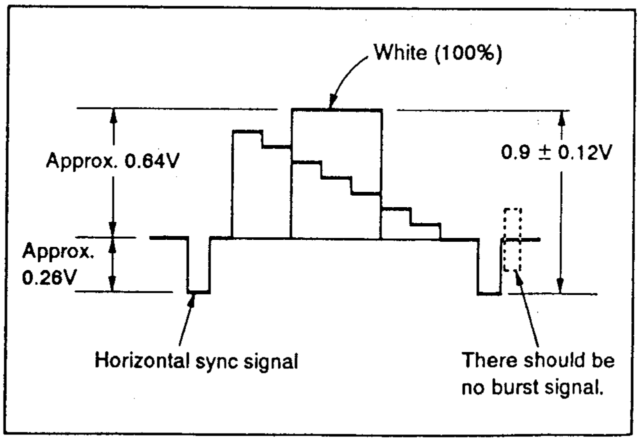


Fig. 7-18. Color bar signal whose chroma signal and burst signals are turned off

1. Current consumption adjustment (VF-69P board)

Purpose: Obtain a constant illumination of back light (fluorescent lamp)

Adjustment error: Viewfinder becomes too dark or too bright.

Mode	Stop
Signal	Color bar signal whose chroma signal and burst signal are turned off.
Measurement Point	Remove L953 and measure +: Pin ① of CN951 –: ⊕ pin of C958
Measuring Instrument	Ammeter
Adjustment Element	RV951
Specified Value	72 ± 5 mA

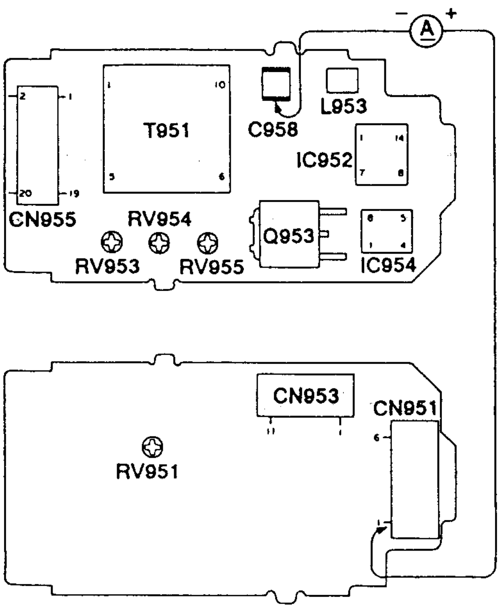
Note 1: Adjust within 30 secs. after the power supply has been turned on.

Note 2: After adjusting, connect L953.

Adjusting method:

1. Check that the voltage of Pin ① of CN951 is 6.0 ± 0.1 Vdc.
2. Adjust the current consumption to 72 ± 5 mA with RV951.

VF-69P board Component side


A
–
+
2
1
20
19
T951
1
10
5
6
C958
L953
IC952
1
14
7
8
CN955
RV954
RV953
RV955
Q953
IC954
CN953
CN951
6
1
RV951

VF-69P board Coductor side

Fig. 7-19.

2. Power supply voltage check (VF-68P board)

Mode	Stop
Measuring Instrument	Digital voltmeter
+12V check	
Measurement Point	Pin ⑥ of CN801 (12V)
Specified Value	+11.6 ± 0.2 Vdc
+13.5V check	
Measurement Point	Pin ④ of CN801 (13.5V)
Specified Value	+13.5 ± 0.3 Vdc

Checking Method:

1. Check that the UNREG power supply voltage (Pin ① of VF-69 board CN951) of CN951 is 6.0 ± 0.1 Vdc.
2. Check that each power supply voltage satisfies the specified value.

3. VCO adjustment (VF-68P board)

Purpose: Obtain a constant TG frequency.

Adjustment error: Big change may collapse picture.

Mode	Stop
Signal	Color bar
Measurement Point	Pin ⑩ of CN801 (PCO)
Measuring Instrument	Oscilloscope (DC range)
Adjustment Element	RV804
Specified Value	A=2.8 ± 0.1V

Adjusting method:

1. Check the GND level of the oscilloscope.
2. Adjust the PCO voltage (A) to the specified value with RV804.

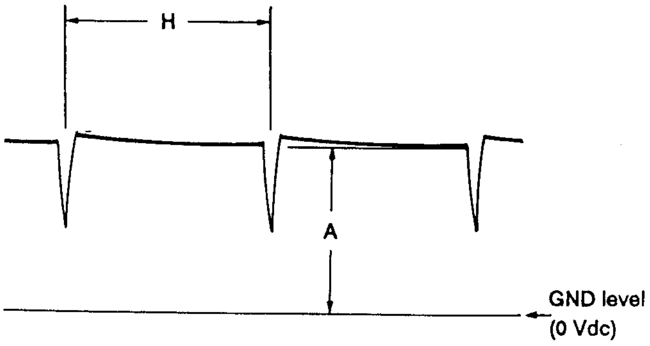
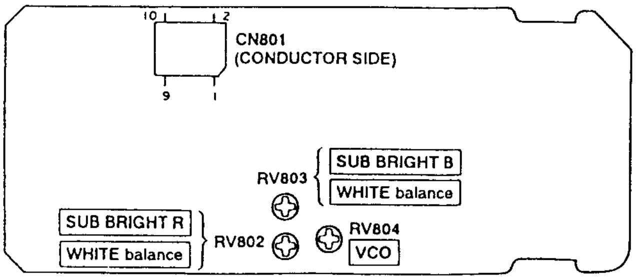

H
A
GND level
(0 Vdc)

Fig. 7-20.

VF-68P BOARD (COMPONENT SIDE)


10
2
9
1
CN801
(CONDUCTOR SIDE)
SUB BRIGHT B
WHITE balance
RV803
SUB BRIGHT R
WHITE balance
RV802
RV804
VCO

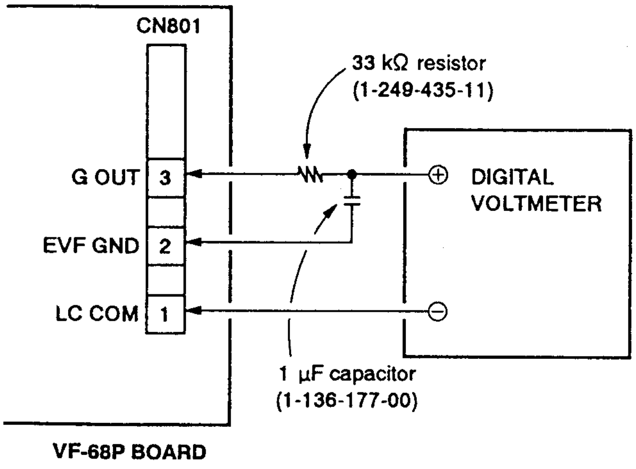
4. LC COM voltage check (VF-68P board)

Purpose: Obtain the correct pairing electrode voltage.
Adjustment error: Poor EVF picture. Flicker sometimes. Apparent vertical streaking

Mode	Stop
Signal	Color bar signal whose chroma signal and burst signal are turned off
Measurement Point	+: Pin ③ of CN801 (G OUT) –: Pin ① of CN801 (LC COM)
Measuring Instrument	Digital voltmeter
Specified Value	A=0.3 ± 0.1Vdc

Connection:

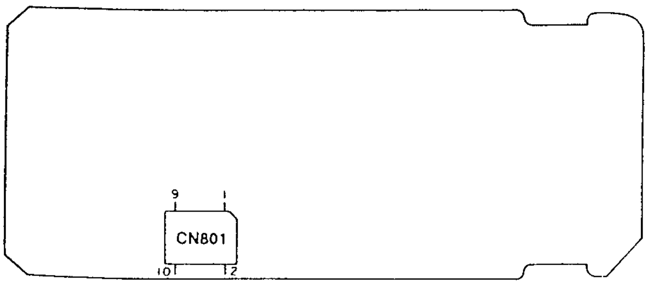
1) Connect the digital voltmeter as shown in the following figure.


CN801
G OUT
3
EVF GND
2
LC COM
1
33 kΩ resistor
(1-249-435-11)
⊕
DIGITAL
VOLTMETER
⊖
1 µF capacitor
(1-136-177-00)
VF-68P BOARD

Checking method:

1. Check that the voltage difference (A) satisfies the specified value.

VF-68P BOARD (CONDUCTOR SIDE)


9
1
CN801
10
2

5. BRIGHT adjustment (VF-69P board)

Purpose: Adjusts EVF picture brightness.
Adjustment error: Picture saturation (white saturation) or black saturation

Mode	Stop
Signal	No signal
Measurement Point	Pin ③ of CN801 of VF-68 board (G OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV953
Specified Value	A=7.2 ± 0.1V

Adjusting method:

1. Adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value with RV953.

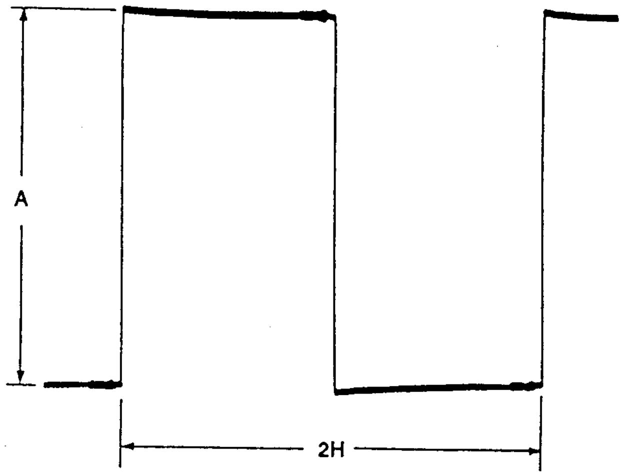
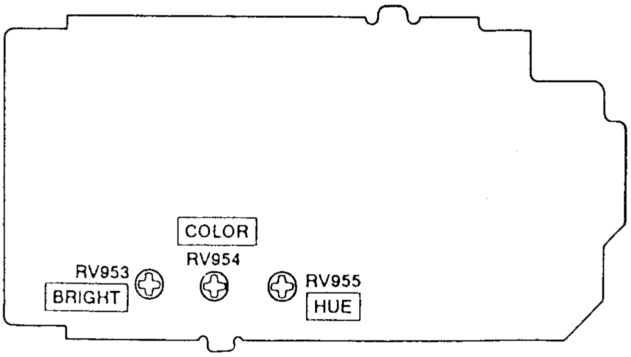


Fig. 7-21.

VF-69P BOARD (COMPONENT SIDE)


COLOR
RV954
RV953
BRIGHT
RV955
HUE

6. CONTRAST check (VF-68P board)

Purpose: Sets EVF picture contrast.

Adjustment error: Loss of contrast. (Whitish) White saturation

Mode	Stop
Signal	Color bar signal whose chroma signal and burst signal are turned off
Measurement Point	Pin ③ of CN801 (G OUT)
Measuring Instrument	Oscilloscope
Specified Value	A=2.3 ± 0.15V

Checking method:

1. Check that the white 100% level (A) is the specified value.

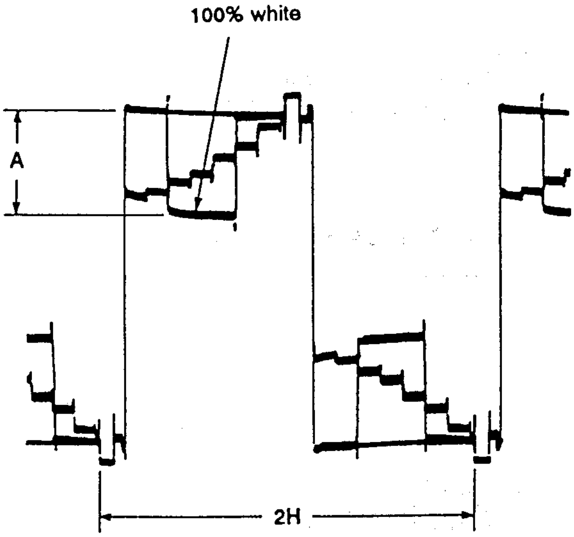
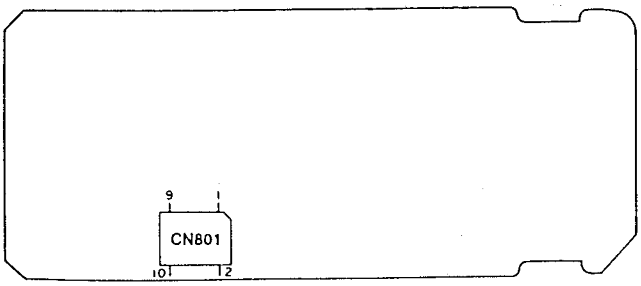


Fig. 7-22.

VF-68P BOARD (CONDUCTOR SIDE)



7. SUB BRIGHT R preset adjustment (VF-68P board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN801 (R OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV802
Specified Value	A=7.2 ± 0.1V

Adjusting method:

1. Adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value with RV802.

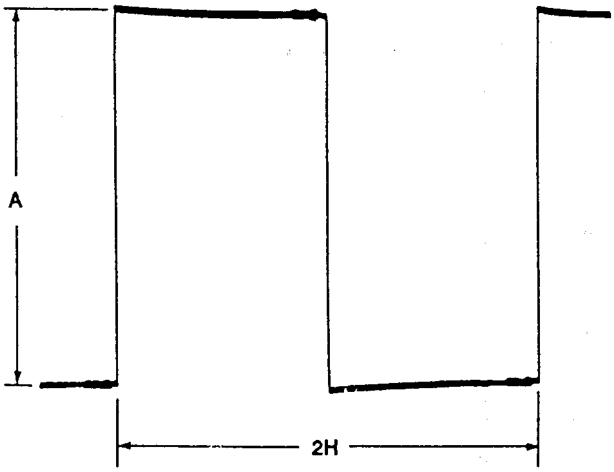
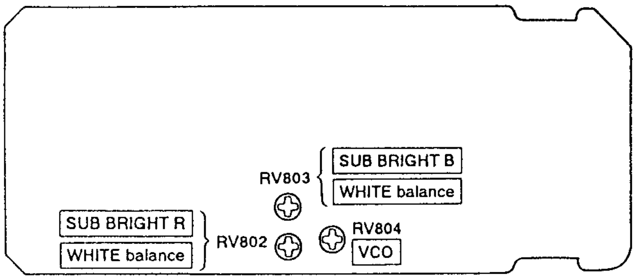


Fig. 7-23.

VF-68P BOARD (COMPONENT SIDE)



8. SUB BRIGHT R preset adjustment (VF-68P board)

Purpose : To perform the No.9 adjustment smoothly.

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of CN801 (B OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV803
Specified Value	A=7.2 ± 0.1V

Adjusting method:

1. Adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value with RV803.

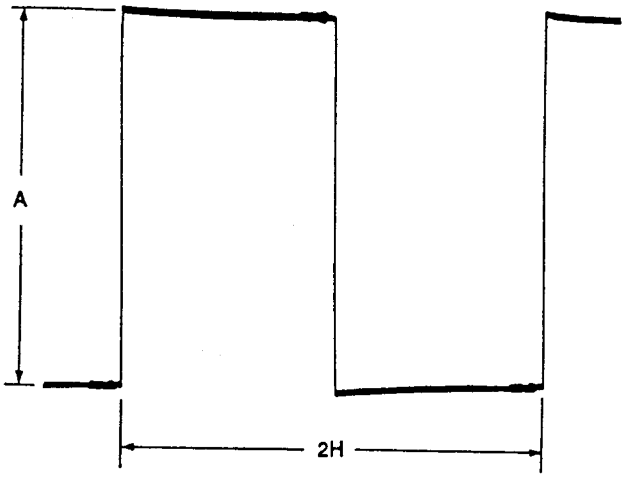


Fig. 7-24.

9. White balance adjustment (VF-68P board)

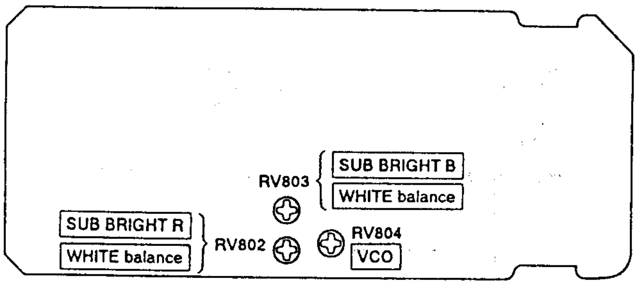
Mode	Record
Signal	Color bar signal whose chroma signal and burst signal are turned off
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Element	R: RV802 B: RV803
Specified Value	Picture should not be colored

Note: Turn on the power supply and adjust after more than one minute.

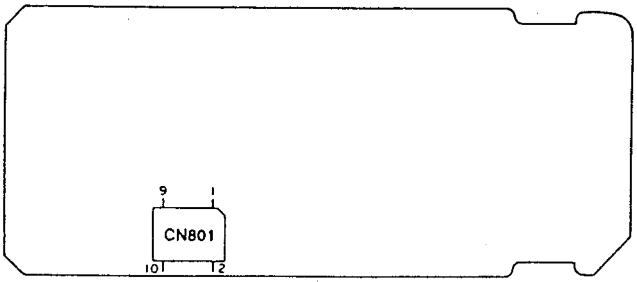
Adjusting method:

1. Check that the LCD display is not colored.
   If it is, adjust RV802 and RV803.

VF-68P BOARD (COMPONENT SIDE)



VF-68P BOARD (CONDUCTOR SIDE)



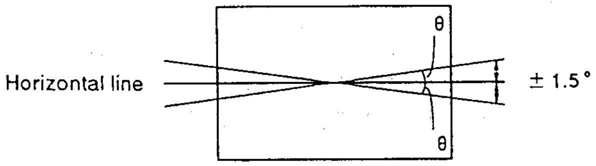
1-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (AEP, UK model)

1. Horizontal Slant Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	± 1.5°

Adjusting method:

Order	Procedure
1	Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2	Loosen the DY (deflection yoke) tightening nut.
3	Rotate DY, and adjust the image so that it is horizontal.
4	Tighten the DY tightening nut. (Do not tighten it too tightly.)



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 7-25.

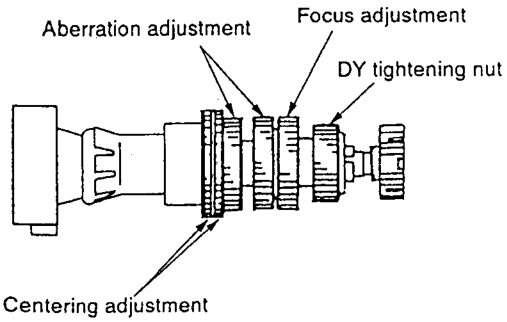


Fig. 7-26.

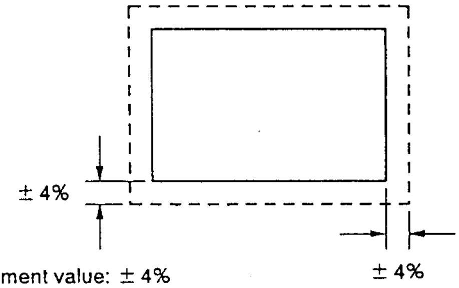
2. Centering Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	± 4%

Adjusting method:

Order	Procedure
1	Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform.

Note: As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value: ± 4%

Fig. 7-27.

3. Focus Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

Order	Procedure
1	Adjust the focus ring to obtain the optimum focus.

4. Aberration Adjustment

Mode	E-E
Signal	Dot pattern
Specified Value	T<2•D F<D

Note: Refer to page 7-49 "3-1-3 How to set the REC mode in the model without REC switch" in VIDEO SECTION ADJUSTMENTS.

Adjusting method:

Order	Procedure
1	Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2	If the centering becomes displaced here, perform the centering adjustment from the beginning again.

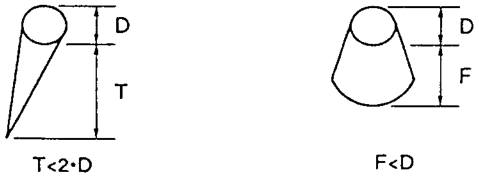


Fig. 7-28.

5. Horizontal Oscillation Frequency Adjustment (VF-42P board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.30 ± 0.05 Vdc

Adjusting method:

Order	Procedure
1	Adjust to 2.30 ± 0.05 Vdc using RV501.

6. Horizontal Amplitude Adjustment (VF-42P board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

Order	Procedure
1	Rotate RV502 on the VF-42P board, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2	Rotate RV504 on the VF-42P board so that the brightness is the normal level.
3	Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals).

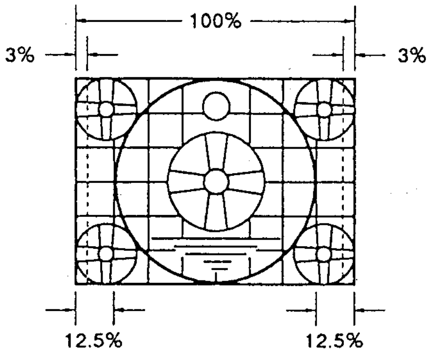
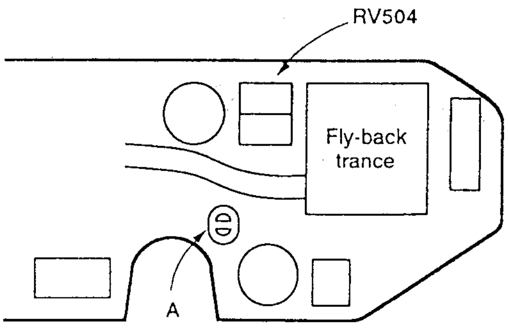


Fig. 7-29.



VF-42P board (Component side)

Section A	Size H
Open	Small
Short	Big

Fig. 7-30.

7. Vertical Amplitude Adjustment (VF-42P board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

Order	Procedure
1	Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

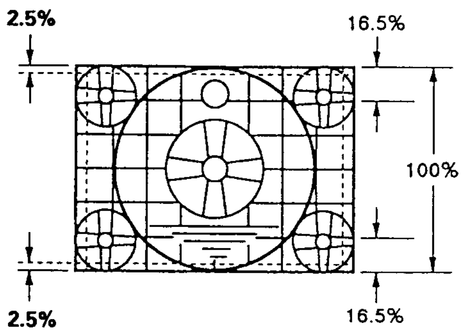


Fig. 7-31.

8. Brightness, Contrast Adjustment (VF-42P board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

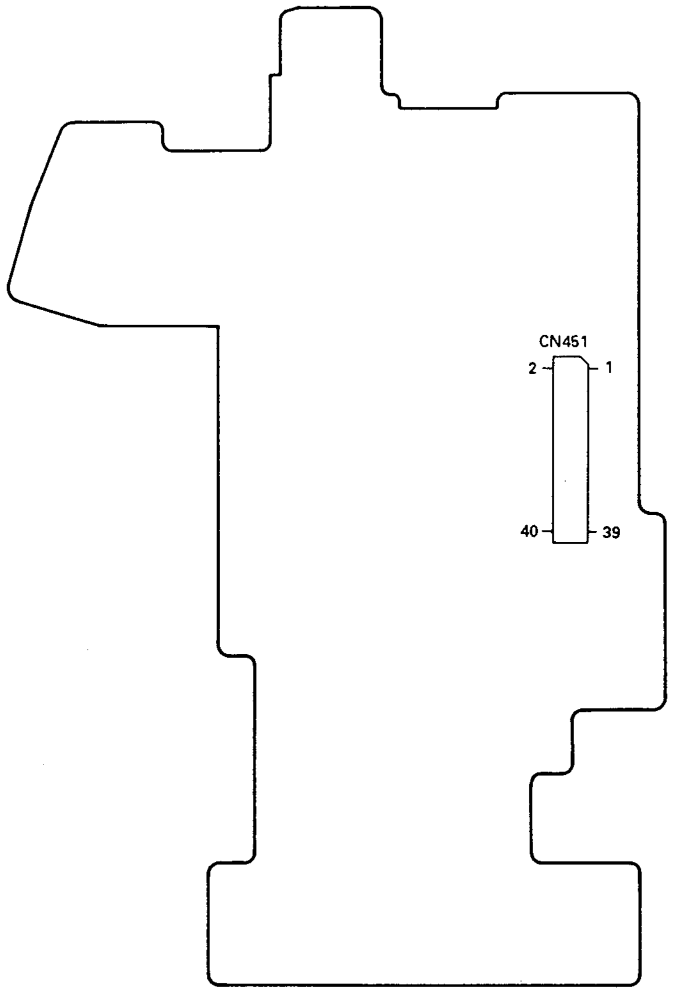
Order	Procedure
1	Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should not be so bright that the cross hatch in the monoscope circle appears vague. The dark section should not be so dark that the darkest section and the second darkest section of the gray scale cannot be differentiated.)

9. Horizontal Amplitude, Vertical Amplitude, Focus Check

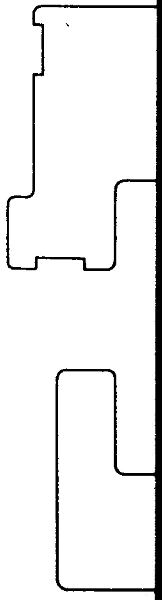
"6. Horizontal Amplitude Adjustment" and "7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. If this case, perform "8. Brightness, Contrast Adjustments" again. Moreover, check the focus, and if it found to be vague, perform "3. Focus Adjustment" and "4. aberration Adjustment".

1-5. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

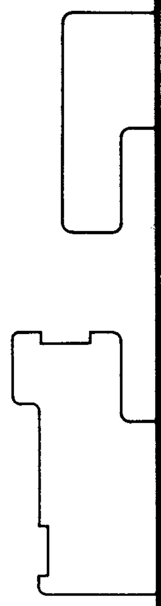
DD-62 BOARD (COMPONENT SIDE)



VC-132 BOAR



VC-132 BOA

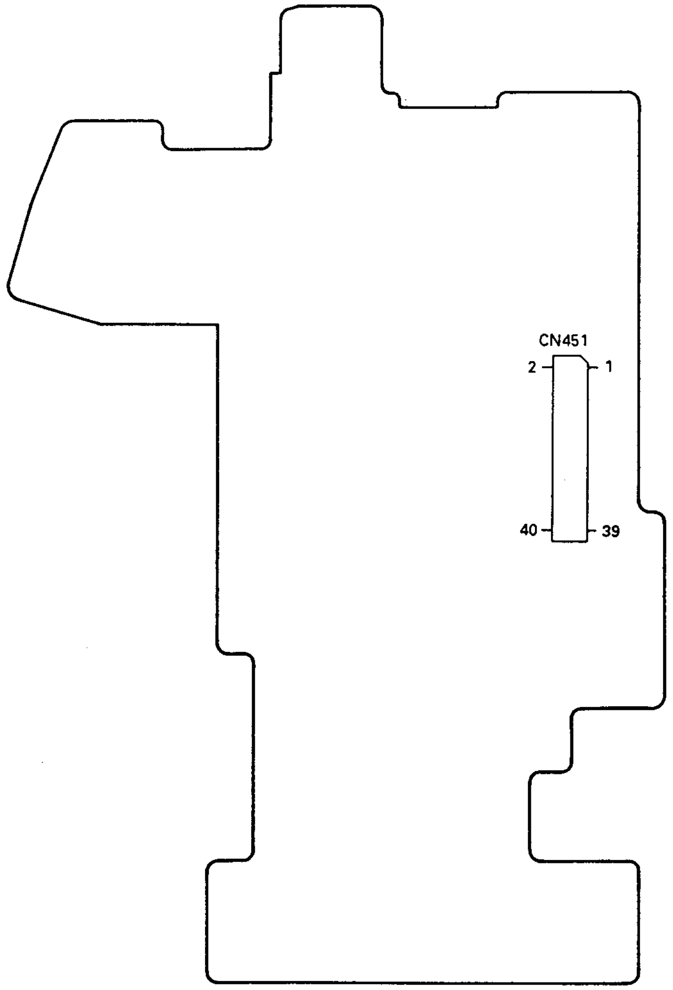


Focus

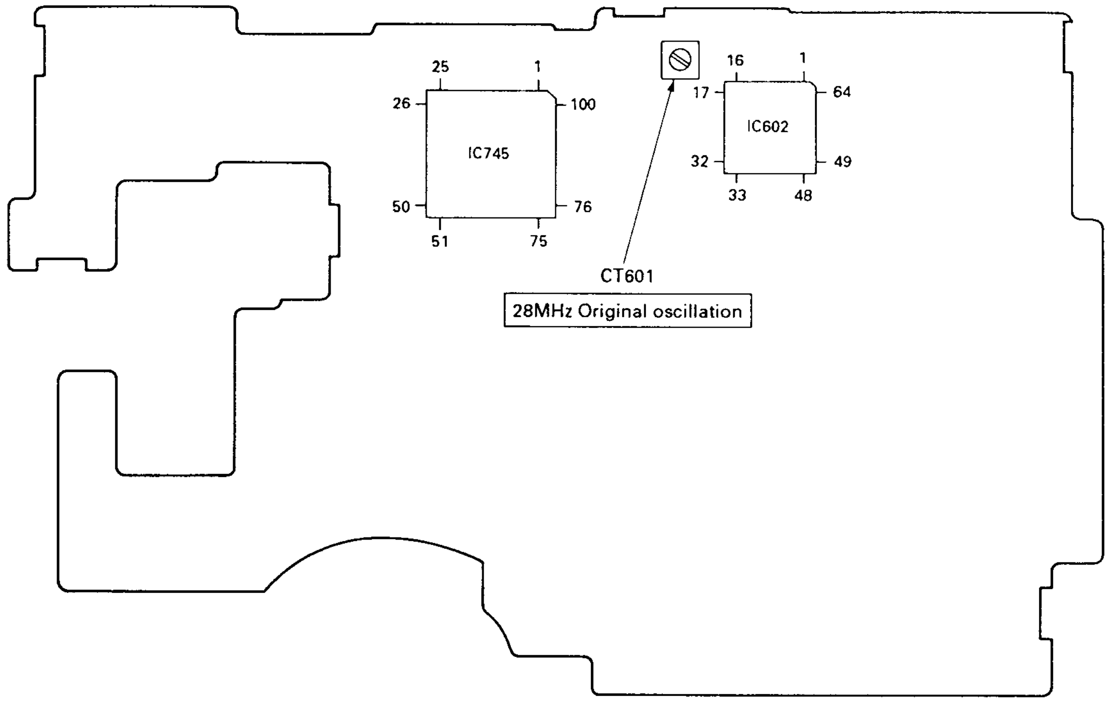
'. Vertical
fied values.
gain. If this
nts" again.
ue, perform
'.

1-5. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

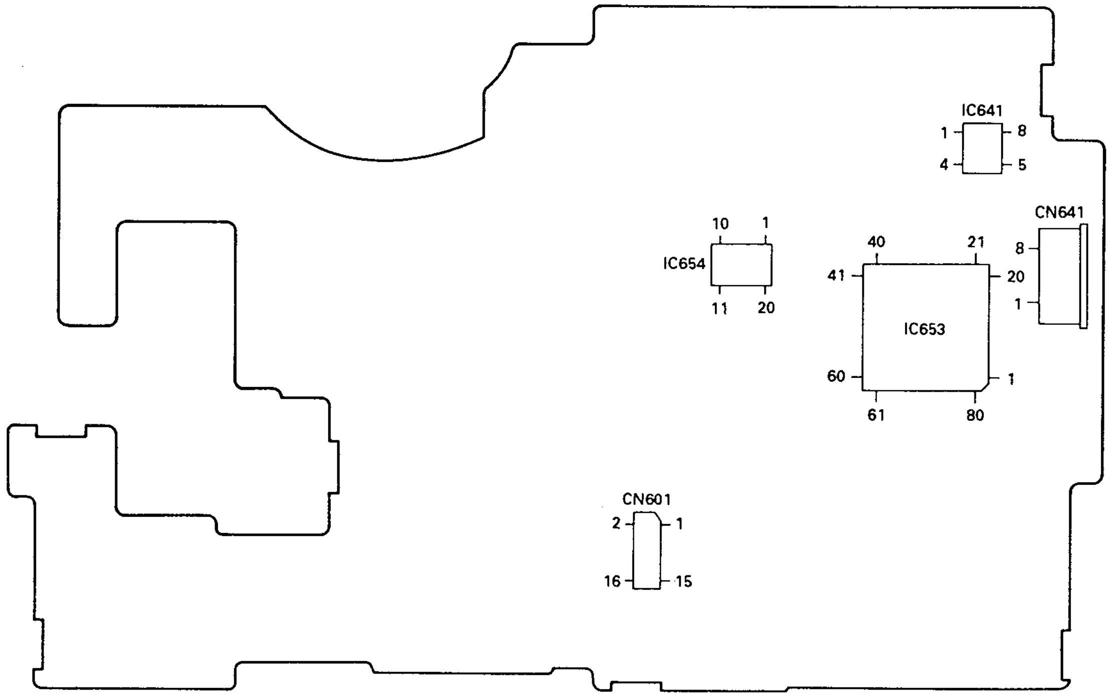
DD-62 BOARD (COMPONENT SIDE)


CN451
2
1
40
39

VC-132 BOARD (COMPONENT SIDE)


25
1
26
100
IC745
50
76
51
75
16
1
17
64
IC602
32
49
33
48
CT601
28MHz Original oscillation

VC-132 BOARD (CONDUCTOR SIDE)


IC641
1
8
4
5
CN641
10
1
IC654
11
20
40
21
41
IC653
60
61
80
1
8
20
1
CN601
2
1
16
15

7-2. MECHANICAL SECTION ADJUSTMENTS

For Mechanical Adjustments

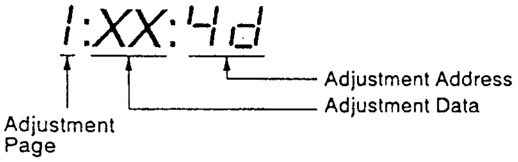
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]

1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-99 board CN002 pin ③ (PB RF)
   CH2: VS-99 board CN002 pin ④ (RF SWP)
3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet side. (Refer to Fig. 7-32 and 7-33)
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment IV (A Mechanism).

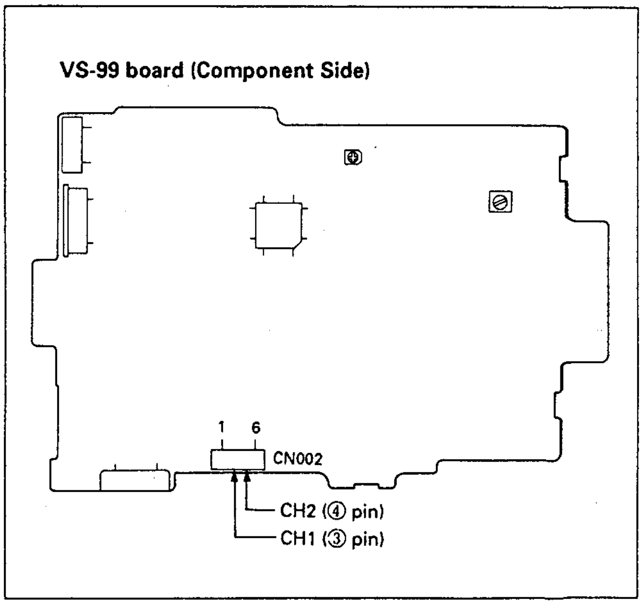


Fig. 7-32.

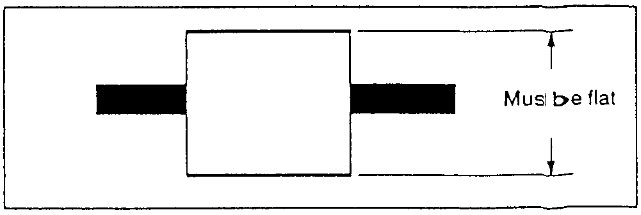


Fig. 7-33.

7-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 7-98.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following measuring equipments are used for adjusting the video section.

3-1-1. Equipments Used

1) TV monitor
2) Oscilloscope 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tape
    For traking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-7CE)
    Part Code: 8-967-995-18
    For checking operations
    (WR5-4CL)Note 1
    Part Code: 8-967-995-56
    (WR5-5CSP)Note 2
    Part Code: 8-967-995-47
    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
    For checking AFM stereo operations (WR5-9CS)
    Part Code: 8-967-995-28
12) Remote control unit for adjustment (J-6082-053-B)
13) DD-62 board extension cord (40P, 0.8 mm)
    Part Code: J-6082-168-A
14) AU-149 board, extension cord (38P, 0.8 mm)
    Part Code: J-6082-274-A

3-1-2. Precautions upon Adjustment

The EVF (electronic view-finder) section is not required for adjusting the video section.
Remove the following connector when removing the EVF section
1. CN502 of VS-99 board (Pin 6)

The MA-184 board is not required for adjusting the video section.
Remove the following connector when removing the MA-184 board.
1. CN801 of AU-149 board (Pin 13)

The audio board (AU-149 board) is not required other than in the "REC AFM Level Check" of "Audio System Adjustments" and "Video System Adjustments". Remove the following connectors.
1. CN505 of VS-99 board (Pin 38)

The lens block (including CD-105 board, MF-244 board and YP-13 board) is not required other than in "Power supply System Adjustments" . Remove the following connectors and three mounting screws, and remove it from the VC-132 board.
1. CN601 of VC-132 board (Pin 16)
2. CN711 of VC-132 board (Pin 21)
3. CN740 of VC-132 board (Pin 12)
4. CN743 of VC-132 board (Pin 6)

3-1-3. How to Set the REC in the Model without REC Switch

1. REC key forbidden accept mode cancel
   1. Connect the adjusting remote commander to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 4B[6B]. (REC key forbidden accept mode cancel)
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)

2. Signal input mode setting
   1. Select the page: 2 address: 00, and set the data to 01. (Specification category 1)
   2. Set data: 01 to page 2, address: 3A. (Input mode set*)

   Note: Setting of output mode.
   Set data: 02 to page 2, address: 3A (category: 1)

The REC key is accepted through the above procedure. The adjusting remote commander may be removed, gereafter.
Note: After compleating adjustment be sure to perform "4. Procedure after completed adjustment".

3. REC mode setting
   1. Set th HOLD switch of the adjusting remote commander to the OFF (Normal) position.
   2. Press the REC buttons set up REC mode.

4. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbideden accept mode after adjustment.
   1. Connect the adjusting remoter commander to the REMOTE terminal.
   2. Turn on the power..
   3. Turn on the HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 4A[6A]. (Setting of the REC key forbidden accept mode)
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)

Note: No mark: US, Canadian model
[ ]: E, Australian, Toutrist model

3-1-4. Connector for Adjustments (CN002 of VS-99 Board)

Some video section adjustment points are concentrated at CN002 of the VS-99 board.

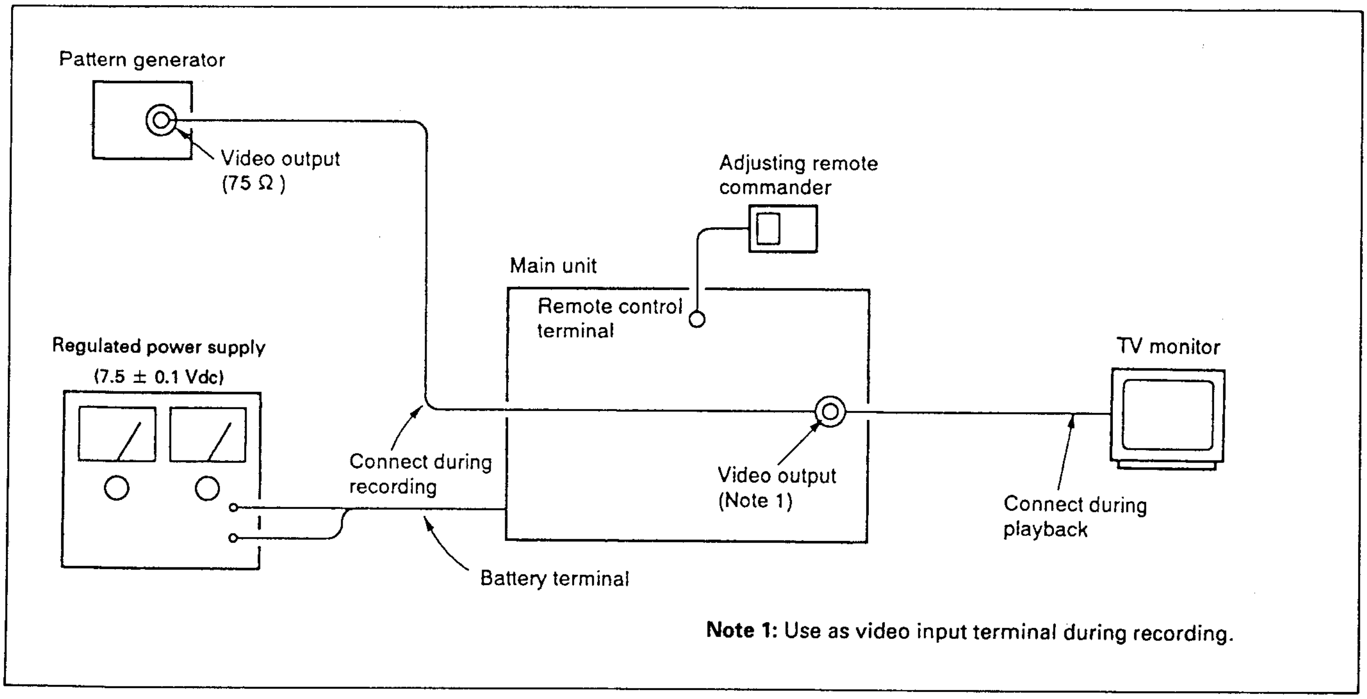
Pin No.	Signal Name
1	PB CH1
2	PCM OUT
3	PB RF
4	RF SWP
5	RF GND
6	REC 2CH

Table 7-6.

3-1-5. Connection of Equipments

Unless spefified otherwise, connect the measuring instruments as shown in Fig. 7-34. and perform the adjustments.

- Camera/player power switch (S900 of power switch unit) .... Position of the player
- Connect the adjusting remote commander to the remote terminal (DD-62 board J452).


Pattern generator
Video output (75 Ω)
Adjusting remote commander
Main unit
Remote control terminal
Regulated power supply (7.5 ± 0.1 Vdc)
TV monitor
Connect during recording
Video output (Note 1)
Connect during playback
Battery terminal

Note 1: Use as video input terminal during recording.

Fig. 7-34.

3-1-6. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. VIDEO input

Connect the oscilloscope to the video output terminal, and check that the sync signal amplitude of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal to the "red" signal is 0.3:0.66.

The video sinal (color bar) used for adjusting the VTR section is shown in Fig. 7-35.

Note: Be sure to check in the recording mode.

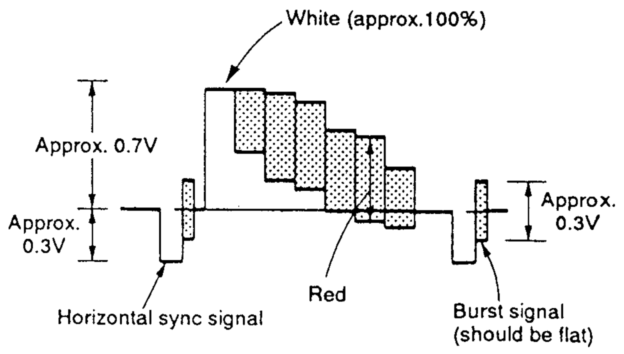

White (approx.100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Horizontal sync signal
Red
Burst signal (should be flat)

Fig. 7-35. Color Bar Signal of Pattern Generator

3-1-7. Alignment Tape

The following table lists available alignment tapes.
Use the tape specified in the signal column for each adjustment.

If the tape type is not specified for adjustments using tapes to check operations, use any tape for checking operations.

Name	Recording mode	Tape type	Tape speed	Recording Contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for adjusting 1 MHz tape path		Switching position adjustment
Video frequency characterostocs WR5-7CE	E	ME	LP	RFsweep 0 to 15 MHz Marker 2, 4, 5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Checking operations (SP mode) WR5-5CSP	L	MP	SP	• Video signal Color bar 4 mins. Monoscope 4 mins. • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20sec. 400 Hz 20sec. } Repeated 4 times 14kHz 20sec. Color bar section 1 kHz 4 mins.	Checking operations
WR5-8CSE	E	ME	SP			
Checking operations (LP mode) WR5-4CL	L	MP	LP	• Video signal Color bar 4 mins. Monoscope 4 mins. • Audio signal (AFM) 400 Hz 60% modulation		
WR5-8CLE	E	ME	LP			
AFM stereo checking operations WR5-9CS	L	MP	SP	• Video signal Color bar 4 mins. Monoscope 4 mins. • Audio signal (AFM) stereo section (color bar) Lch: 400 Hz, Rch: 1kHz L+R: 1.5 MHz ± 60kHz DEV L−R: 1.7 MHz ± 30kHz DEV Bilingual section (Monoscope) MAIN: 400Hz (1.5 MHz ± 60kHz DEV) SUB: 1 kHz (1.7 MHz ± 30kHz DEV)	• Audio signal (PCM) 400Hz 8 mins.	AFM stereo Checking operations

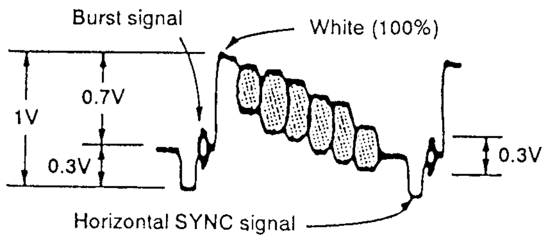
Note: Recording mode
L .... Normal (convertional) mode
E .... Hi8 (Hi-band) mode

Tape type
MP .... Metal particle tape
ME .... Metal evaporated tape

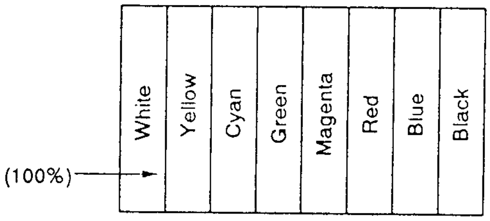
Table 7-7.

Fig. 7-36 shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video output terminal (Terminated at 75 Ω)



Color bar signal waveform



Color bar pattern

Fig. 7-36. Color Bar Signals of the Alignment Tape

3-1-8. Input/Output Level and Impedance

1. E, Australian Tourist model

Video input	Pin jack Input signal: 1 Vp-p, 75 Ω unbalance, sync negative
Video output	Pin jack Output signal: 1 Vp-p, 75 Ω unbalance, sync negative
S Video input	4-pin mini DIN Luminance signal: 1 Vp-p, 75 Ω unbalance, sync negative Color signal: 0.3 Vp-p, 75 Ω unbalance
S Video output	4-pin mini DIN Luminance signal: 1 Vp-p, 75 Ω unbalance, sync negative Color signal: 0.3 Vp-p, 75 Ω unbalance
Audio input	Pin jack Input level: −7.5 dBs (0dBs=0.775 Vrms) Input unbalance: Above 47 k Ω
Audio output	Pin jack Specified output: −7.5 dBs Output unbalance: Below 2.2 k Ω

2. AEP, UK model

Video output	Pin jack Output signal: 1 Vp-p, 75 Ω unbalanced, sync negative
S video output	4-pin mini DIN Luminance signal: 1 Vp-p, 75 Ω unbalanced, sync negative Color signal: 0.3 Vp-p, 75 Ω unbalanced
Audio output	Pin jack Specified output: −7.5 dBs Output impedance: Below 2.2 k Ω

3-1-9. Recording Mode (Normal/Hi8) Switching

The record mode (normal/Hi8) of this unit switches as shown in the following table. The playback mode (normal/Hi8) switches automatically according to the recording mode of the tape played back.

Hi8 Switch (Menu Display)	Tape Used	Recording Mode
AUTO	ME	Hi8
	Hi8 MP	
	MP	Normal
OFF	ME	Normal
	HI8 MP	
	MP	

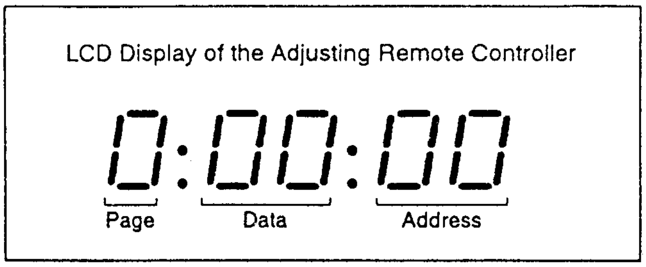
Table 7-7-1.

3-1-10. Service Mode

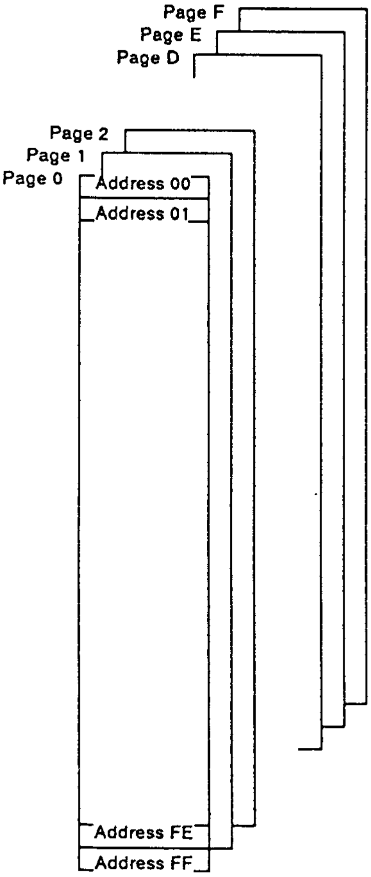
1. Setting the service mode

The service mode consists of the adjustment mode which adjusts the EVR and the test mode which shows the condition of the unit.

The unit can be set into the test mode and adjustment mode by connecting the adjusting remote commander (Set the HOLD switch to "HOLD").

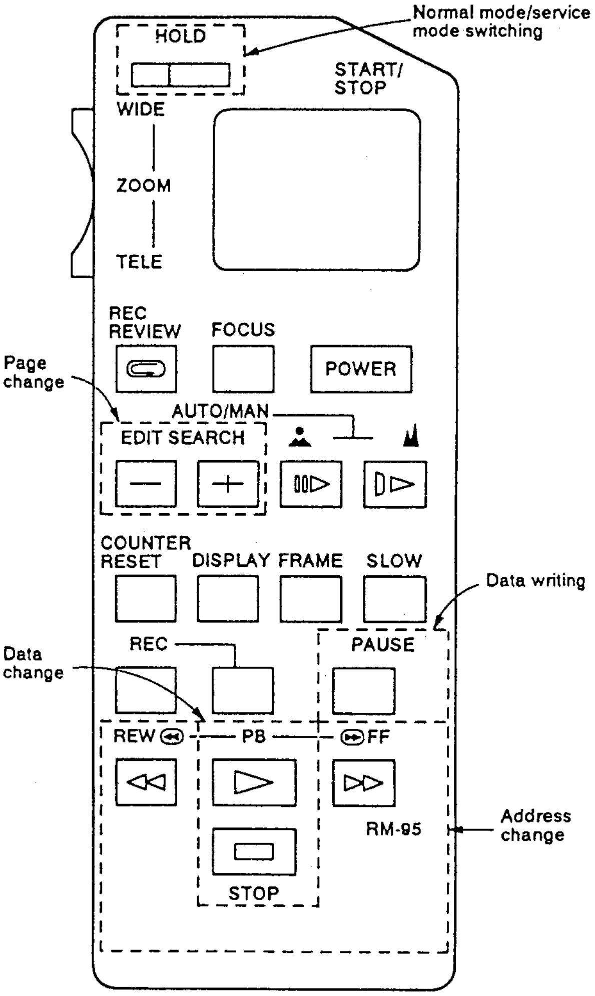

LCD Display of the Adjusting Remote Controller
0:00:00
Page
Data
Address

(1) Service LANC memory map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Page	Page Layout
0	
1	D page write protect setting/release
2	Mode controller RAM, I/O (Note 1)
3	Mechanism controller RAM, I/O (Note 1)
4	
5	
6	Shared by camera section (Note 1)
7	Camera controller RAM, I/O (Note 1)
8	AF controller RAM, I/O (Note 1)
9	
A	2 bytes data display
B	
C	VTR EEPROM (Note 2)
D	VTR EEPROM (Note 2)
E	Camera EEPROM (Note 3)
F	Camera EEPROM (Note 3)

Adjusting remote commander RM-95 (J-6082-053-B)


Normal mode/service mode switching
HOLD
START/STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page change
AUTO/MAN
EDIT SEARCH
—
+
COUNTER RESET
DISPLAY
FRAME
SLOW
Data writing
Data change
REC
PAUSE
REW
PB
FF
STOP
RM-95
Address change

Note 1: If the data of this page is rewritten using the adjusting remote commander to set the adjustment mode or test mode, the data will not be written in the EEPROM (nonvolatile memory). Therefore, the original condition (normal condition) can be returned by removing the main power supply (7.5V) and lithium battery.

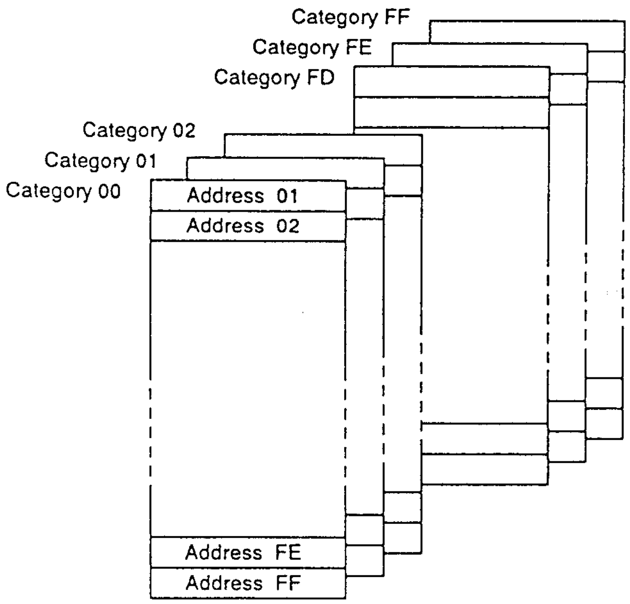
Note 2: The data of this page is written in the EEPROM (IC901 of VC-132 board).

Note 3: The data of this page is written in the EEPROM (IC601 of VC-132 board).

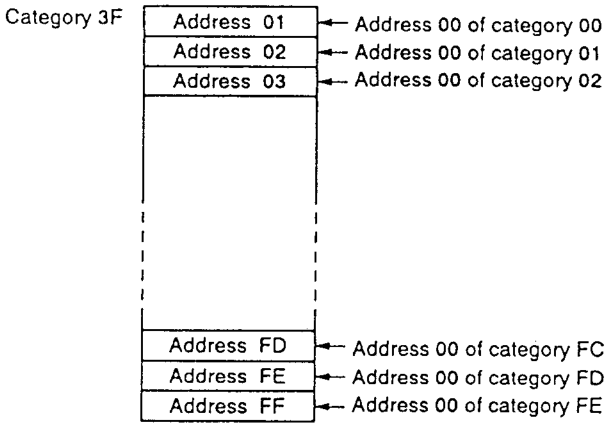
(2) Category codes

This unit uses category codes for pages 2 and 3. The 256 addresses from 00 to FF are insufficient for the mode controller and mechanism controller to access the RAM. Therefore, new category codes have been used to seemingly increase addresses (Addresses 0000 to FFFF).

However, the data of address 00 are actually used as page numbers to form the 256 pages from 00 to FF, as shown in the following figure. This address 00 data are called category codes to discriminate them from the real page numbers. The new pages are called categories.


Category FF
Category FE
Category FD
Category 02
Category 01
Category 00
Address 01
Address 02
Address FE
Address FF

(Supplement) As each category no longer has address 00 as it is, this address cannot be accessed using the adjusting remote commander. Therefore, category 3F is used for accessing address 00.


Category 3F
Address 01
Address 02
Address 03
Address FD
Address FE
Address FF
Address 00 of category 00
Address 00 of category 01
Address 00 of category 02
Address 00 of category FC
Address 00 of category FD
Address 00 of category FE

(Example)

Specification of			
	Page 2	Category 01	Address 15

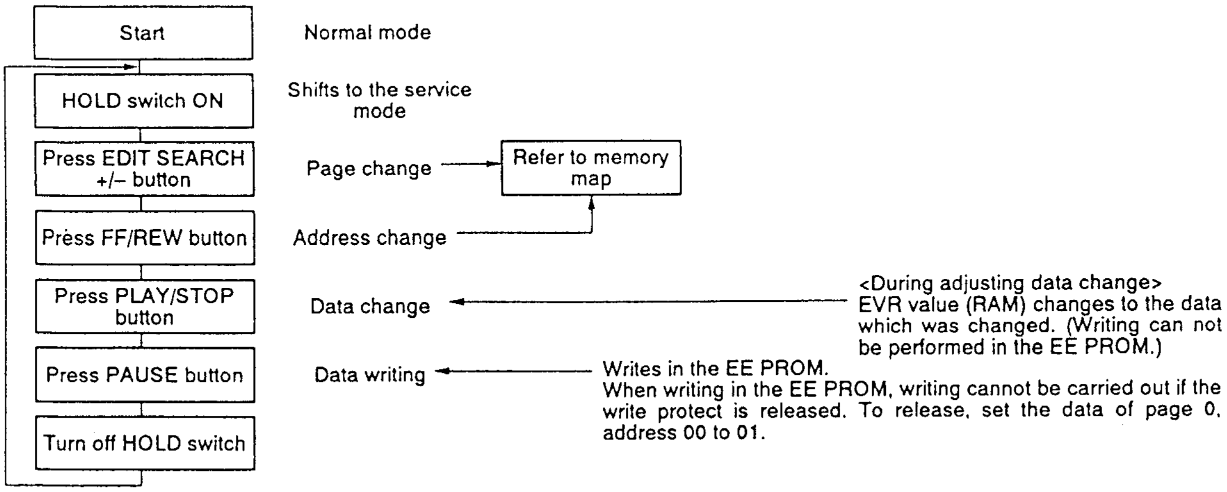
Page 2 is the mode controller

Page 3 is the mechanism controller

The actual category and address are specified by the adjusting remote commander as follows.

Order	Page	Address	Data	Procedure
1	2	00	01	Select category 01 using the data of page 2, address 00. From here onwards, category 01 will be selected at page 2 until the data of page 2, address 01 is rewritten.
2	2	15		As the data of page 2, address 00 is 01, select page 2, address 15 to select page 2, category 01, address 15. (The data of this address is the battery voltage A/D conversion value of the mode controller input.)

[Shifting to the service mode using the adjusting remote commander]


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press EDIT SEARCH +/– button
Page change
Refer to memory map
Press FF/REW button
Address change
Press PLAY/STOP button
Data change
Press PAUSE button
Data writing
Turn off HOLD switch

<During adjusting data change>
EVR value (RAM) changes to the data which was changed. (Writing can not be performed in the EE PROM.)

Writes in the EE PROM.
When writing in the EE PROM, writing cannot be carried out if the write protect is released. To release, set the data of page 0, address 00 to 01.

Command Name	Command Function	Normal LANC Command
Page Up	Page+1	Edit Search+
Page Down	Page–1	Edit Search –
Direct Page Set	Sets to the specified page	Event Clear
Address Up	Address+1	Fast Forward
Address Down	Address–1	Rewind
Data Up	Data+1	Play Back
Data Down	Data–1	Stop
Store	Writes data in the EEPROM, RAM	Pause

2. Page D write protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Release the write protect

3. Test mode setting

Set/release each test mode. Release the protect (Page: 1, Address: 00, Data: 01) before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching , 5 minutes pause release prohibition Power off prohibition/release by battery end
02	Test mode 2 1'ch frequency response characteristics adjustment Lock the tracking by 1'ch only SP/LP automatic discrimination prohibition, manual switching
03	Test mode 3 Tracking shift Performs the track shift playback Rear lock distinction prohibition during PB SP/LP automatic discrimination prohibition, manual switching
04	Test mode 4 Rear lock mode Performs rear lock playback SP/LP automatic discrimination prohibition, manual switching

※ For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (7.5 Vdc).

※ Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

4. Emergency code

Fault (error) symptoms can be checked.

Page D	Address 06

First emergency code

……First error code generated

Page D	Address 07

Last emergency code

……Last error code generated (This data will be renewed each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after repairs/adjustments.

※ When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

Code	Error Condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Reel errors at other times
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during normal drum conditions
08	PG error during normal drum conditions
09	Phase error during normal drum conditions

5. Emergency mode

The operation mode can be checked during faults.

Page D	Address 08

First emergency mode

……The operation mode when the first error is generated

Page D	Address 09

Last emergency mode

……The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

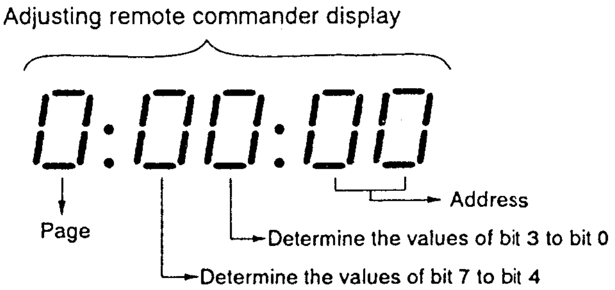
※ Be sure to rewrite the data of addresses 08 and 09 to 00 after repairs/adjustments.

※ When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

Code	Error Conditions
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW (+)
95	REC REVIEW (−)
97	−PB PAUSE
A2	EMERGENCY LOADING
A5	EDIT SEARCH (+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH (−)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

6. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

Remote commander display	Bit value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
Ⓑ→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

7. Mode controller input check

Page 2	Category 00	Address 02

Bit	Input Signal	Input Signal Level
0	BATT IN (IC902 ⑮)	"1"=H, "0"=L
1	PB V (IC902 ⑯)	"1"=PB V input present, "0"=No PB V input
2		
3	$\overline{\text{LANC PWR ON}}$ (IC902 ⑱)	"1"=H, "0"=L
4	$\overline{\text{LI PREEND}}$ (IC902 ⑲)	"1"=H, "0"=L
5	$\overline{\text{EEPROM WE}}$ (IC902 ⑳)	"1"=H, "0"=L
6		
7	$\overline{\text{WIND ON}}$ (IC902 ㉒)	"1"=H, "0"=L

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	02		The H/L of each input signal can be discriminated by differentiating the bit values of the display data.

Page 2	Category 00	Address 1C

Bit	Input Signal	Input Signal Level
0	BATT SENCE (IC902 (91))	"1"=L, "0"=H
1		
2	BRIGHT A (IC902 (93))	"1"=H "0"=L
3	BRIGHT B (IC902 (94))	
4		
5		
6		
7		

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	1C		The H/L of each input signal can be discriminated by differentiating the bit values of the display data.

8. White balance mode switching

Page 2	Category 00	Address 21

Data	White balance mode
01	Indoor
02	Outdoor
03	Hold
06	Auto

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	AE	40	Prohibition of camera function renewal
3	2	00	01	Specification of category 1
4	2	21		Specify the white balance mode by setting data 01 to 03 and 06.

9. Zoom position check

Page 2	Category 00	Address 2B, 2C

Address	Data
2B	Zoom position data (lower)
2C	Zoom position data (upper)

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	2B		Data (00 to FF) indicates lower data of zoom position
3	2	2C		Data (00 to 02) indicates upper data of zoom position. WIDE end: 00 TELE end: 02

10. LCD, LED check

Page 2	Category 00	Address AE

Data	
00	Normal
10	All segments of LCD light up Tally LED lights up

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	AE	10	All segments of LCD and tally LED light up.

11. Key Input check

Page 2	Category 3F	Address 01

Bit	Key Switch	Condition of Switch
0	Date (+) (CF block S924)	"1"=OFF "0"=ON
1	Time (CF block S925)	
2	Cassette eject (DD-62 S451)	
3	Video power supply (Power switch unit S900)	
4	Auto lock (CF block S927)	
5	Start/Stop (SW-222 S904)	
6	CC DOWN (Mechanism section)	
7	Camera power supply (Power switch unit S900)	

Using method:

Order	Page	Address	Data	Procedure
1	2	00	3F	Specification of category 3F
2	2	01		The on/off of each key switch can be discriminated by differentiating the bit values of the display data.

12. Key Input check (A/D Port)

Page 2	Category 01	Address 16 to 1A

Display Data / Address	00 to 10	11 to 4C	4D to 7E	7F to B1	B2 to E7	E8 to FF
16 (AD0: IC902 (82))	STOP (CF block S901)	Foward (CF block S902)	REC (CF block S903)	Edit search (+) (CF block S904)	Edit search (−) (CF block S905)	No key input
17 (AD1: IC902 (83))	Pause (CF block S906)	Rewind (CF block S907)	Playback (CF block S908)	Menu (CF block S909)		No Key input
18 (AD2: IC902 (84))	Slow (CF block S910)	Set (CF block S911)	Item (CF block S912)			No key input
19 (AD3: IC902 (85))	Program AE (CF block S913)	Bright ON/OFF (CF block S914)	Focus (CF block S915)	Auto White Balance (CF block S916)	Fader (CF block S917)	No key input
1A (AD4: IC902 (86))	Reset (CF block S918)	Index Mark (CF block S919)	Counter/Time code (CF block S920)	Zero Memory (CF block S921)	Steady shot (CF block S922)	No key input

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 00
2	2	16 to 1A		The key pressed can be discriminated by the display data of each address.

13. Wireless remote commander reception contents check

Page 2	Category 01	Address 11

Display Data	Pressed Key of Wireless Remote Commander
FF	Non
9A	TELE
9B	WIDE
99	Start/Stop
1B	REW
1C	FWD
18	Stop
1A	Playback
19	Pause
5A	Data screen
23	Slow

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	11		The pressed key of the wireless remote commander can be discriminated by the display data.

14. Battery voltage check

Page 2	Category 01	Address 15

Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4 Vdc
E0	Approx. 8.8 Vdc
D0	Approx. 8.2 Vdc
C0	Approx. 7.5 Vdc
B0	Approx. 6.9 Vdc
A0	Approx. 6.3 Vdc
90	Approx. 5.6 Vdc
80	Approx. 5.0 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	15		The battery voltage can be discriminated by the display data.

※ Voltage measurement accuracy is approx. ± 10%.

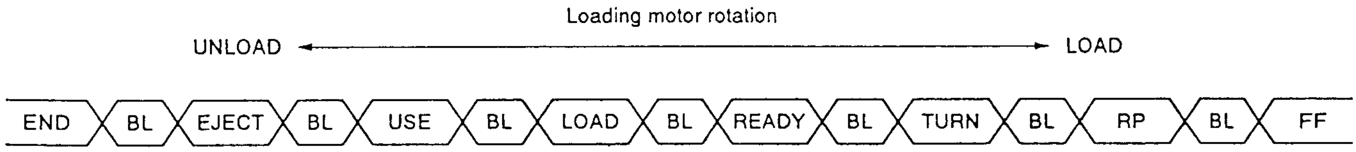
15. Mechanism section switch, etc. check

Page 2	Category 00	Address 86

Bit	Switch, etc.	Condition
0	Hi8 MP	"1"=Hi8 MP tape, "0"=Others
1	PB E/L	"1"=Hi8 mode playback, "0"=Others
2	ME/MP	"1"=ME tape, "0"=MP tape
3	REC PROOF	"1"=Recording prohibited, "0"=Recording possible
4		
5	MODE SW 0	Mode switch position*1
6	MODE SW 1	
7	MODE SW 2	

Note 1

MODE SW			**POSITION**	**FUNCTION**	$\overline{\textbf{CC DOWN}}$
0	**1**	**2**			
1	1	1	BL	Interval of each position	
0	1	1	END	FULL END processing (T side lock removal)	1
0	0	1	EJECT	Cassette compartment ejection	1
1	0	1	USE	EJECTED (Unskate end)	1
0	0	1	LOAD	LOADING (Skate in)	0
1	0	0	READY	NORMAL STOP position	0
1	1	0	TURN	OFF of pinch roller only with PB ↔ REV (oscillating position)	0
0	1	0	RP	PB, REC, RVS, REV, REW	0
0	0	0	FF	FF/CUE	0



Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	86		The mode switch position can be discriminated by the upper 1 digit of the display data. The conditions of various switches can be discriminated by the bit value of the lower 1 digit.

16. Mechanism controller input/output check

Page 2	Category 00	Address 85

Bit	I/O Signal	Condition
0	PB LP/SP DET	"1"=LP playback, "0"=Others
1	SYNC DET	"1"=VTR SYNC present, "0"=No VTR SYNC
2	REC CLOG	"1"=Clog occurred, "0"=Others
3		
4	JOG	"1"=Variable speed playback, "0"=Others
5	VA PB MODE	"1"=PB mode, "0"=E-E mode
6	AUDIO MUTE	"1"=Mute, "0"=Audio output
7	VIDEO MUTE	"1"=Mute, "0"=Video output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	85		The condition of each input/output signal can be discriminated by differentiating the bit value of the display data.

17. Mechanism controller input check

Page 2	Category 00	Address 89

Bit	I/O Signal	Condition
0	$\overline{\text{S IN}}$	"0"=S VIDEO terminal connection condition, "1"=S VIDEO terminal open condition
1	$\overline{\text{DEW DET}}$	"0"=Condensation occurred, "1"=Others
2		
3		
4	$\overline{\text{MIC MONO}}$	"0"=During monaural external microphone use, "1"=Others
5	$\overline{\text{JACK MONO}}$	"0"=Audio output terminal (right) connection condition. "1"=Audio output terminal (right) open condition.
6	PB 1.7M DET	"1"=During AFM stereo/bilingual tape playback, "0"=Others
7	JACK OUT	"1"=Jack out, "0"=Jack in

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	89		The condition of each input signal can be discriminated by differentiating the bit values of the display data.

18. Mechanism controller A/D port input voltage check

Page 3	Category 02	Address 14

Display Data	A/D Port Input Voltage
00 to FF	Approx. 0 Vdc to approx. 5 Vdc

Using method:

<table>
<tr><th>Order</th><th>Page</th><th>Address</th><th>Data</th><th>Procedure</th></tr>
<tr><td>1</td><td>3</td><td>00</td><td>02</td><td>Specification of category 02</td></tr>
<tr><td>2</td><td>3</td><td>0E</td><td>02</td><td>Permission for A/D conversion operations</td></tr>
<tr><td>3</td><td>3</td><td>13</td><td></td><td>Set the data according to the following table, and specify the A/D port of the mechanism controller.
<table>
<tr><th>Data</th><th>Mechanism Controller Port</th></tr>
<tr><td>00</td><td>(60) pin; AN0, T REEL FG</td></tr>
<tr><td>01</td><td>(59) pin; AN1, S REEL FG</td></tr>
<tr><td>02</td><td>(58) pin; AN2, ATF ERROR</td></tr>
<tr><td>03</td><td>(57) pin; AN3, BATT SENSE</td></tr>
<tr><td>04</td><td>(56) pin; AN4, $\overline{\text{DEW DET}}$</td></tr>
<tr><td>05</td><td>(55) pin; AN5, TAPE TOP</td></tr>
<tr><td>06</td><td>(54) pin; AN6, TAPE END</td></tr>
</table></td></tr>
<tr><td>4</td><td>3</td><td>14</td><td></td><td>The A/D port input voltage can be discriminated according to the display data.</td></tr>
</table>

19. Tape top/end sensor check

Page 3	Category 02	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape end
10	Tape top
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	10	Request for tape top/end sampling operations
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

20. Individual operations of the drum, capstan, and loading motor

Page 3	Category 02	Address 11

Display	Operations
00	Normal
02	Drum in normal rotation
04	Drum in reverse rotation
06	Capstan in normal rotation
08	Capstan in reverse rotation
0A	Loading motor in normal rotation
0C	Loading motor in reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	01	Permission for individual operations of motor
3	3	11		The motor can be operated individually by setting the data indicated above.
4				Turn off the main power supply (7.5 Vdc).

21. Version of mechanical control microprocessor

Page 3	Category 02	Address 0B

Data	Microprocessor version
05	Version 5 (CXP80624A-034R: VS-99 board IC501)

22. Page D address list

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

*1 No mark : AEP/UK model
[ ] : E/Australian/Tourist model

Address	Name	Function [ ] contains the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00		Not used	FF	FF
01	Test mode	Test mode	00	00
02	Destination flag	Destination flag	92[B3]*1	92[B3]*1
03	BATT END	Battery end adjustment	8D	
04	SW POSITION (LOW)	SW POSITION adjustment [Lower]	80	
05	SW POSITION (HIGH)	SW POSITION adjustment [Upper]	0B	
06	EMERGENCY code (FIRST)	Error codes and modes are recorded in the memory. Rewrite the data of these addresses to 00 after repairs/adjustments.	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP NORMAL SP)	CXA1207 serial data	68	68
0B	SR DATA (MP NORMAL LP)	CXA1207 serial data	57	57
0C	SR DATA (ME HI8 SP)	CXA1207 serial data	69	69
0D	SR DATA (ME HI8 LP)	CXA1207 serial data	6F	6F
0E	SR DATA (ME NORMAL SP)	CXA1207 serial data	68	68
0F	SR DATA (ME NORMAL LP)	CXA1207 serial data	5C	5C
10	SR DATA (MP HI8 SP)	CXA1207 serial data	63	63
11	SR DATA (MP HI8 LP)	CXA1207 serial data	5F	5F
12	SR DATA (EDIT ON NORMAL)	CXA1207 serial data	5C	5C
13	SR DATA (EDIT ON HI8)	CXA1207 serial data	65	65
14		Not used	FF	FF
15		Not used	FF	FF
16		Not used	FF	FF
17		Not used	FF	FF
18		Not used	FF	FF
19		Not used	FF	FF
1A		Not used	FF	FF
1B		Not used	FF	FF
1C		Not used	FF	FF
1D		Not used	00	00
1E		Not used	00	00
1F		Not used	00	00
20	VARIATION	DDS display start year, EJECT permission, MUTE.	54	54
21	ADJUST MODE	CAM P ON, VTR P ON, etc.	00	00
22 – 26		Not used	FF	FF
27	BATT HUNTING PREVENTION LEVEL	Battery hunting prevention threshold level	00	
28	BATT REF	Battery pre end	91	

Table 7-8 (1).

Address	**Name**	**Function** **[ ] contains the adjustment voltage output terminal**	**Adjustment data**	
			Initial value	**Memo column**
29	MECH SW	Mechanism control switch	07	07
2A	TRAC FWD ADJUST	Slow brake (Foward)	00	00
2B	TRAK REV ADJUST	Slow brake (Reverse)	00	00
2C	STILL BRK ADJUST	Still brake	00	00
2D	BATT REF (LOW)	Amount of remaining battery (Low)	94	
2E	BATT REF (MID)	Amount of remaining battery (Mid)	99	
2F	BATT REF (FULL)	Amount of remaining battery (Full)	A0	
30 – 38		Not used	FF	FF
39	MT'CH(E)	Hi8 1'ch freqyency characteristics adjsutment	AA	
3A	MT'CH (L)	Normal 1'ch frequency characteristics adjustment(⑱ of IC005)	AA	
3B–3D		Not used	FF	FF
3E	MT 2A (E)	Hi8 2Ach frequency characteristics adjustment	88	
3F	MT 2A (L)	Normal 2Ach frequency characteristics adjustment (⑫ of IC003)	88	
40		Not used	FF	FF
41		Not used	FF	FF
42	MT 1A (E)	Hi8 1Ach frequency characteristics adjustment	82	
43	MT 1A (L)	Normal 1Ach frequency characteristics adjustment (③ of IC003)	82	
44		Not used	FF	FF
45		Not used	FF	FF
46	REC C (REC)	REC C level adjustment (EE) (⑨ of IC005)	A1	
47	REC C (PB)	REC C level adjustment (PB) (⑨ of IC005)	00	00
48		Not used	FF	FF
49		Not used	FF	FF
4A	SYNC AGC	EE level adjustment (⑦ of IC005)	62	
4B		Not used	FF	FF
4C	C COMB	Chroma comb type filter adjustment (⑧ of IC005)	A6	
4D	SR IR	IR adjustment (④ of IC005)	AF	
4E	CAR.-E	Hi8 Y-FM carrier frequency adjustment	A8	
4F	CAR.-L	Normal Y-FM carrier frequency adjustment (⑥ of IC005)	A8	
50	DEV.-E	Hi8 Y-FM deviation adjustment	98	
51	DEV.-L	Normal Y-FM deviation adjustment (⑤ of IC005)	98	
52	REC Y (ME E)	Hi8 ME REC Y level adjustment.	7E	
53	REC Y (MP E)	Hi8 MP REC Y level adjustment.	7E	
54	REC Y (ME L)	Normal ME REC Y level adjustment (⑫ of IC005)	7E	
55	REC Y (MP L)	Normal MP REC Y level adjustment (⑫ of IC005)	7E	
56	REC Y (PB)	REC Y level adjustment (PB) (⑫ of IC005)	00	00
57	PB Y (REC)	EE mode PB Y level (② of IC005)	00	00
58	PB Y (E)	Hi8 PB Y level adjustment.	8F	
59	PB Y (L)	Normal PB Y level adjustment (② of IC005)	97	
5A	EMPH (EE)	EE emphasis input level adjustment (③ of IC005)	86	
5B	EMPH (PB)	PB emphasis input level adjustment (③ of IC005)	8E	

Table 7-8 (2).

Address	Name	Function [ ] contains the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
5C	REC L CONT (ME E SP)	Hi8 ME SP REC level control.	80	
5D	REC L CONT (MP E SP)	Hi8 MP SP REC level control.	80	
5E	REC L CONT (ME L SP)	Normal ME SP REC level control	A5	
5F	REC L CONT (MP L SP)	Normal MP SP REC level control	88	
60	REC L CONT (ME E LP)	Hi8 ME LP REC level control.	80	
61	REC L CONT (MP E LP)	Hi8 MP LP REC level control.	80	
62	REC L CONT (ME L LP)	Normal ME LP REC level control	A5	
63	REC L CONT (MP L LP)	Normal MP LP REC level control	88	
64	PILOT CONT (ME)	ME pilot control	95	95
65	PILOT CONT (MP)	MP pilot control	84	84
66		Not used	FF	FF
67		Not used	FF	FF
68	D. CLIP (ME E SP)	Hi8 ME SP DARK CLIP.	62	62
69	D. CLIP (MP E SP)	Hi8 MP SP DARK CLIP.	6D	6D
6A	D. CLIP (ME L SP)	Normal ME SP DARK CLIP (⑥ of IC003)	5B	5B
6B	D. CLIP (MP L SP)	Normal MP SP DARK CLIP (⑥ of IC003)	5B	5B
6C	D. CLIP (ME E LP)	Hi8 ME LP DARK CLIP.	7C	7C
6D	D. CLIP (MP E LP)	Hi8 MP LP DARK CLIP.	AE	AE
6E	D. CLIP (ME L LP)	Normal ME LP DARK CLIP (⑥ of IC003)	5B	5B
6F	D. CLIP (MP L LP)	Normal MP LP DARK CLIP (⑥ of IC003)	5B	5B
70	W. CLIP (ME E SP)	Hi8 ME SP WHITE CLIP.	70	70
71	W. CLIP (MP E SP)	Hi8 MP SP WHITE CLIP.	51	51
72	W. CLIP (ME L SP)	Normal ME SP WHITE CLIP (⑤ of IC003)	B5	B5
73	W. CLIP (MP L SP)	Normal MP SP WHITE CLIP (⑤ of IC003)	AC	AC
74	W. CLIP (ME E LP)	Hi8 ME LP WHITE CLIP. Not used	59	59
75	W. CLIP (MP E LP)	Hi8 MP LP WHITE CLIP. Not used	20	20
76	W. CLIP (ME L LP)	Normal ME LP WHITE CLIP (⑤ of IC003)	B5	B5
77	W. CLIP (MP L LP)	Normal MP LP WHITE CLIP (⑤ of IC003)	AC	AC
78	REC MX	REC matrix adjustment (⑲ of IC005)	61	
79		Not used	FF	FF
7A	ZOOM GAIN ADJ	Zoom Gain Adjsutment (⑬ of IC003)	88	88
7B	1.5 DEV	1.5 MHz deviation adjustment (⑦ of IC003)	9B	
7C	1.7 IR	1.7 MHz IR adjustment (④ of IC003). Not used.	B0	
7D	1.7 DEV	1.7 MHz deviation adjustment (⑧ of IC003)	AB	
7E	A FADER	Auto fader (⑬ of IC005)	FF	FF
7F	ID VCO	MK VCO Adjustment (② of IC003)	80	
80	ZOOM CONT B	Zoom control B	FF	FF
81	ZOOM CONT A	Zoom control A	FF	FF

Table 7-8 (3).

Address	**Name**	**Function** **[ ]Contains ther adjustment voltage output terminal**	**adjustment data**	
			Initial value	**Memo column**
82 – DF		Not used	FF	FF
E0	NEST DEF BIT	CCD imager correction pattern (for backup)	00	
E1	CCD DEFECT 0	CCD imager correction data (for backup) ※ Refer to page 7-19 "1-2. 8 CCD Imager Correction Data Writing" of Camera Section Adjustments.	00	
E2	CCD DEFECT 1		00	
E3	CCD DEFECT 2		00	
E4	CCD DEFECT 3		00	
E5	CCD DEFECT 4		00	
E6	CCD DEFECT 5		00	
E7	CCD DEFECT 6		00	
E8	CCD DEFECT 7		00	
E9	CCD DEFECT 8		00	
EA	CCD DEFECT 9		00	
EB	CCD DEFECT 10		00	
EC	CCD DEFECT 11		00	
ED	CCD DEFECT 12		00	
EE	CCD DEFECT 13		00	
EF	CCD DEFECT 14		00	
F0 – FF		Establishment area		

Table 7-8 (4).

3-2. ADJUSTING POINTS WHEN REPLACING MAIN PARTS

1. When replacing drum

"Switching Position Adjustment" of "Servo System Adjustments"

"Playback Frequency Characteristics Adjustment" of "Video System Adjustments"

3-3. POWER SUPPLY SYSTEM ADJUSTMENTS

1. Oscillator frequency check (DD-62 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q454 collector
Measuring Instrument	Frequency counter
Specified Value	460 ± 30 kHz

2. Power supply voltage check (DD-62 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVF 5V check	
Measurement Point	Pin ㉔ of CN451
Specified Value	4.92 ± 0.15 Vdc
SS5V check	
Measurement Point	Pin ㉒ of CN451
Specified Value	4.71 ± 0.15 Vdc
D5V check	
Measurement Point	Pins ⑤ and ⑥ of CN451
Specified Value	4.90 ± 0.15 Vdc
D4V check	
Measurement Point	Pin ③ of CN451
Specified Value	3.80 ± 0.15 Vdc
VIDEO 5V check	
Measurement Point	Pins ⑳ and ㉑ of CN451
Specified Value	4.69 ± 0.15 Vdc
AU5V check	
Measurement Point	Pin ㉓ of CN451
Specified Value	4.72 ± 0.15 Vdc
CAM 5V check	
Measurement Point	Pin ① of CN451
Specified Value	4.85 ± 0.15 Vdc
15V check	
Measurement Point	Pin ④ of CN451
Specified Value	15.00 ± 0.4 Vdc
–8.5V check	
Measurement Point	Pin ② of CN451
Specified Value	−8.5 ± 0.5 Vdc

3-4. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D initial value Input

If the page D data is erased due to some cause, input the page D initial value before adjusting. For details on the initial value, refer to "Page D Address List" in page 7-53 "3-1-9. Service Mode". Input the CCD correction data (Page F, addresses 1F to 2E) to addresses E0 to EF as backup data. For details, f¥refer to "CCD correction data wiring" of Camera Section Adjustments".

Mode	Stop
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 8F, E0 to EF

Inputting method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2	D	00~8F		Input the data (initial value) according to the "Page D Address List". After setting each data, be sure to press the PAUSE button.	
3	D	E0		Set the data of page F address 1F, and press the PAUSE button.	
		E1		Set the data of page F address 20, and press the PAUSE button.	
		E2		Set the data of page F address 21, and press the PAUSE button.	
		⋮		⋮	
		EF		Set the data of page F address 2E, and press the PAUSE button.	

2. Battery end adjustment

Purpose: Sets the battery down voltage.

Adjustment error: Short operating hours of a battery. Picture distortion

Mode	Camera record, auto focus off
Subject	Arbitrary
Measurement Point	LCD display of the adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Adjustment Address	03 (BATT END) 27 (BATT HUNTING PREVENTION LEVEL) 28 (BATT REF) 2D (BATT REF (LOW)) 2E (BATT REF (MID)) 2F (BATT REF (FULL))

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 7-37.

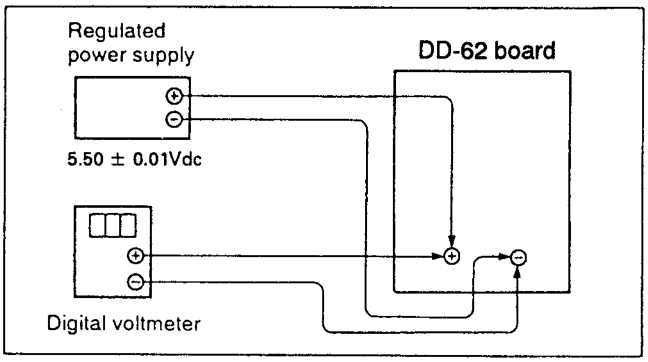


Fig. 7-37.

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1				Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 7.5 ± 0.1 Vdc.	
2				Set the camera recording mode. The auto focus turns off.	
3	**1**	**00**	**01**	**Releasing of protect.**	
4	D	01	01	Set the data, and press the PAUSE button. (Setting of TEST MODE 1)	
5				Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.50 ± 0.01 Vdc.	
6	2	00	01	Specification of page 2, category 1.	
7	2	15		Read the adjusting remote commander display data and take it as DEND.	
8	D	03		Set DEND, and press the PAUSE button.	
9				Convert DEND to decimal to obtain DEND. (Refer to page 7-14 Table 7-5., "Hexadecimal-Decimal Conversion Table"	
10				Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.	
11	D	2F 2E 2D 28 27		$D_{2F}'=\text{DEND}'+19$ $D_{2E}'=\text{DEND}'+17$ $D_{2D}'=\text{DEND}'+13$ $D_{28}'=\text{DEND}'+4$ $D_{27}'=00h$ **Note:** After setting the data, be sure to press the PAUSE button of the adjusting remote commander befor changing address.	
12	D	01	00	Set the data, and press the PAUSE button. (Releasing of TEST MODE 1)	
13				Perform "Battery Down check"	

3. Battery down check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 7-37.

Checking method:

Order	Procedure
1	Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.
2	Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 7.5 ± 0.1 Vdc.
3	Set to the camera recording mode.
4	Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.75 ± 0.01 Vdc.
5	Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
6	Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.69 ± 0.01 Vdc.
7	Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
8	Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.47 ± 0.01 Vdc.
9	Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

3-5. SERVO SYSTEM ADJUSTMENTS

1. Switching position adjustment (VS-99 board)

Purpose: Removes vertical mechanical error of head assembling.
Adjustment error: Skew picture

Mode	Playback
Signal	Alignment tape: For adjusting tracking (WR5-1CP)
Measurement Point	CH1: ④ of CN002 (RF SWP) CH2: ③ of CN002 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION (LOW)) 05 (SW POSITION (HIGH))
Specified Value	t1=0 ± 5 μsec

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2	D	05	80	Initial setting.	
3	D	05		Change the data with the PLAY and STOP buttons, and minimize t1.	Playback mode
4	D	05		Press the PAUSE button.	
5	D	04		Change the data with the PLAY and STOP buttons, and minimize t1.	Playback mode
6	D	04		Press the PAUSE button.	
7				Check that t1 satisfies the specified value. If not, repeat steps 3 to 7 in order.	

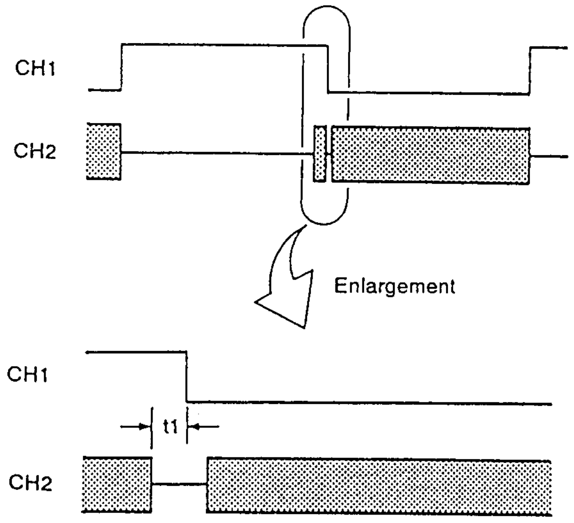


Fig. 7-38.

3-6. VIDEO ADJUSTMENTS

Basically, the video system must be adjusted according to the following adjustment procedures.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in the recording mode. Check that the sync signal and the color burst signal satisfy the standards specified for the set-ups for adjustment shown in Fig. 7-35.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Chroma comb filter adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB line out level adjustment
10) Y FM deviation adjustment
11) Y carrier frequency adjustment
12) Chroma emphasis fo adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check
17) Chroma comb filter fine adjustment

1. Playback frequency characteristics adjustment (VS-99 board)

Purpose: Remove non-uniformity of picture quality between two heads.

Adjustment error: Flicker or over modulation of playback picture

Note: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For adjusting frequency characteristics (WR5-7CE)
Measurement Point	CH1: Pin ③ of CN002 (PB RF) EXT TRIG: Pin ④ of CN002 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOPE: +[−]
Adjusttment Page	D
Adjustment Address	42 (MT 1A(E))[3E (MT 2A(E))] 43 (MT 1A(L))[3F (MT 2A(L))]
Specified Value	4.5MHz level: 8.5 MHz level= 3: (2.0 ± 0.2)

Adjusting methed:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2	D	01		After memorizing the data, set the data to 01.	Test mode 1
3	D	01		Press the PAUSE button	
4	D	42 [3E]		Change the data with the PLAY and STOP buttons, and adjust the level ratio of 4.5 MHz and 8.5 MHz of PB RF output waveform to the specified value **Note:** After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.	Enforced LP mode
	D	01		After memorizing the data, set the data to 02	Test mode 2
	D	39		Same as the Order 4 procedure	
	D	3A		See the data, same data as address 39	
5	D	43 [3F]		Set the data, same data as address 42. Set the data, same data as address 3E.	
6	D	05		Set the data memorized at step 2), and press the PAUSE button of the adjusting remote commander.	
	1	A3		Set bit 0 to 1.	
	1	0A		set bit 7 to 1.	

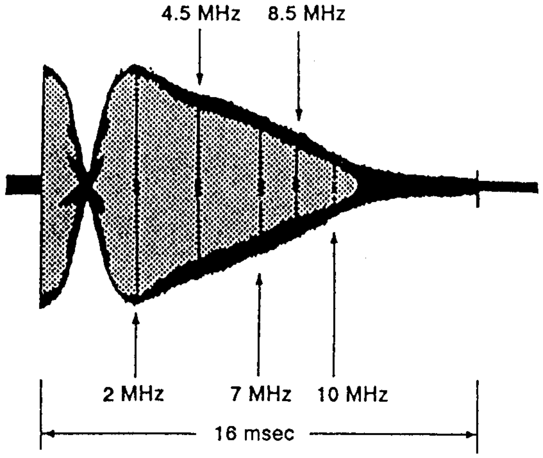


Fig. 7-39.

2. Flying erase check (VS-99 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Q003 collector (JL001)
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8 ± 0.5 MHz Voltage: 5.0 ± 1.0 Vp-p (ME tape) 7.0 ± 1.0 Vp-p (MP tape)

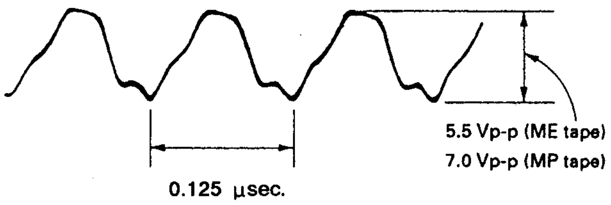


Fig. 7-40.

3. VXO oscillation frequency check (VS-99 board)

Mode	Playback
Signal	Any tape
Measurement Point	Pin ⑫ of IC301 (FSC OUT)
Measuring Instrument	Frequency counter
Specified Value	4433619 ± 100Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

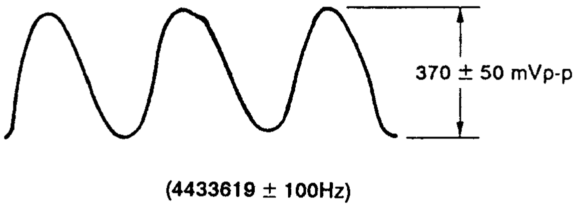


Fig. 7-41.

4. SYNC AGC Level adjustment (VS-99 board)

Purpose: Maintains a constant recording level of video signal.

Adjustment error: Camera EE picture and OA picture may be too bright or too dark.

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ㉘ of IC201 (EE PB Y) (JL248)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (SYNC AGC)
Specified Value	A=0.5 ± 0.01V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	1	00	01	**Releasing of protect.**	
2	D	4A		Change the data with the PLAY and STOP buttons, and adjust the Y signal level (A) to the specified value.	Record
3	D	4A		Press the PAUSE button.	

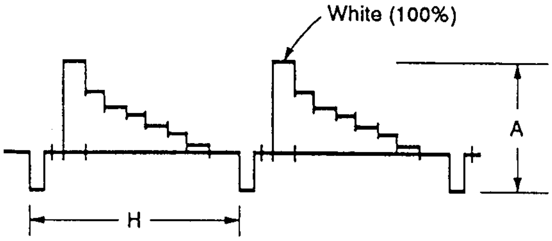


Fig. 7-42.

Related Adjustments:

"Emphasis input level adjustment", "PB Y level adjustment", "Y FM carrier frequency adjustment", "Y FM deviation adjustment".

5. IR adjustment (VS-99 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑦ of IC201 (YCOMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Minimum residual chroma component (A) (Below 80 mVp-p)

Connection:

1) Connect Pin ⑭ of IC201 (or Pin ② of IC202) and Pin (51) of IC201 with a jumper wire

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1				Check that the input is "VIDEO".	
2	**1**	**00**	**01**	**Releasing of protect.**	
3	D	4D		Change the data with the PLAY and STOP buttons, and minimize the residual chroma component (A).	Recording mode Connect Pin ② of IC202 and Pin (51) of IC201 with a jumper wire.
4	D	4D		Press the PAUSE button.	

Note: Remove the lens block and adjust.

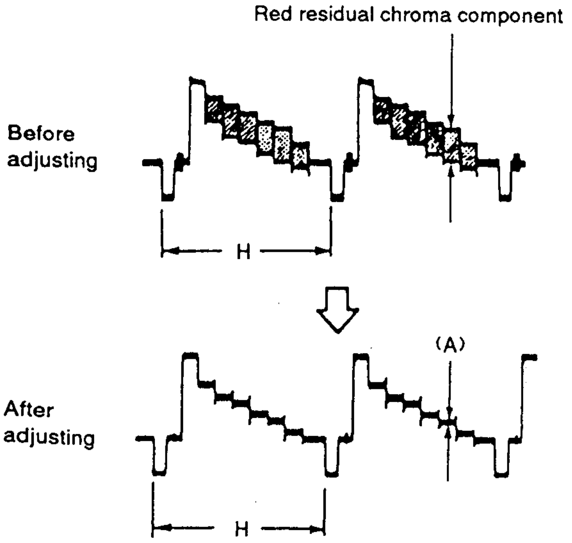


Fig. 7-43.

Related Adjustments:
"Emphasis input level adjustment", "PB Y level adjustment", "Y FM deviation adjustment", "Y FM carrier frequency adjustment".

6. Chroma comb filter adjustment (VS-99 board)

Purpose: Adjusts the comb filter characteristics for Y/C separation during VTR record and also in playback mode.

Adjustment error: Same symptom as item 5.

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑪ of IC201 (C+CD)
Measuring Instrument	Oscilloscope
Adjusting Element	RV161 (Phase)
Adjustment Page	D
Adjustment Address	4C (C COMB)
Specified Value	Minimum residial chroma component (A) (Below 20 mVp-p)

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1				Check that the input is "VIDEO"	
2	1	00	01	**Releasing of protect.**	
3				Minimize the residual chroma component (A) with RV161	Recording mode
4	D	4C		Change the data with the PLAY and STOP buttons, and minimize the residual chroma component.	Recording mode
5	D	4C		Press the PAUSE button.	
6				Repeat steps 3 to 5 in order.	

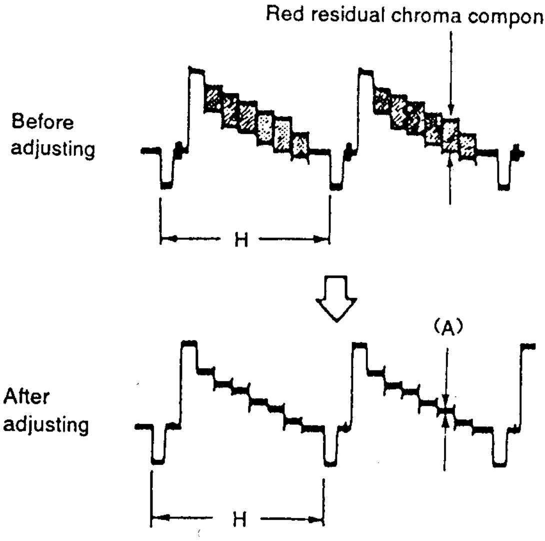


Fig. 7-44.

Related Adjustments:
"Chroma comb filter fine adjustment".

7. Emphasis input level adjustment (VS-99 board)

Purpose: Adjusts the record emphasis characteristics to the specified value.

Adjustment error: Y signal smear, blurred picture, too emphasized edge during OA.

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ③ of IC201 (EMPH IN)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPH (EE))
Specified Value	A=0.50 ± 0.010 V

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of the protect.**	
2	D	5A		Change the data with the PLAY and STOP buttons, and adjust the Y signal level (A) to the specified value.	Recording mode
3	D	5A		Press the PAUSE button.	
4	D	5B		Set the data, same data as address 5A.	

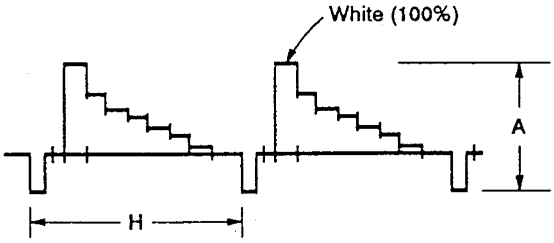


Fig. 7-45.

Related Adjustments:
"PB Y level adjustment", "Y FM deviation adjustment".

8. PB Y level adjustment (VS-99 board)

Purpose: Adjusts playback video level for specified value.
Adjustment error: Too bright or too dark playback picture

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section • Normal mode WR5-5CSP • Hi8 mode WR5-8CSE
Measurement Point	Pin ⑨ of CN101 (S-Y I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (PB YL) • Hi8 mode 58 (PB YE)
Specified Value	A=1.00 ± 0.025V

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2				Play back the color bar section of the normal mode alignment tape.	
3	D	59		Change the data with the PLAY and STOP buttons, and adjust the playback signal level (A) to the specified value.	Play back WR5-5CSP.
4	D	59		Press the PAUSE button.	
5	D	58		1) Playback the color bar section of the Hi8 mode alignment tape (WR5-8CSE). 2) Change the data of page: D, address: 58, and adjust so that the Y signal level (A) becomes the specified value. 3) Press the PAUSE button of the adjusting remote control unit.	

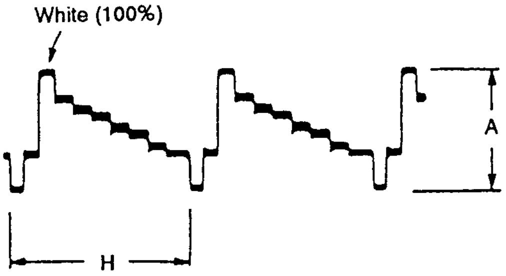


Fig. 7-46.

9. Y FM deviation adjustment
(VS-99 board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ⑮ of IC 201 (DL IN 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (DEV. -L)
Specified Value	A=0.50±0.025V

Note: Check that the "Emphasis input level adjustment" and "PB Y level adjustment" have been completed.

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	1	00	01	**Releasing of protect.**	
2				Record the color bar signal.	
3				Play back the recorded signal.	
4				Compare the playback signal level with the specified value. If it satisfies the value, the adjustment is completed.	
5	D	51		If not,: Change the data with the PLAY and STOP buttons. • Decrease the data if the playback signal level is greater than the specified value. • Increase the data if smaller.	
6	D	51		Press the PAUSE button.	

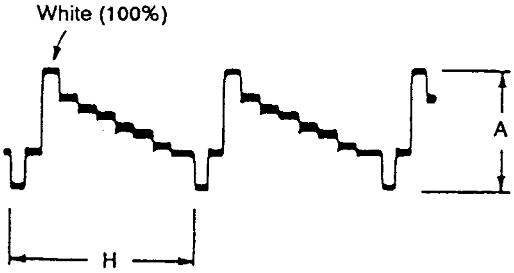


Fig. 7-47.

Related Adjustments:
"Y FM carrier frequency adjustment".

10. Y FM carrier frequency adjustment (VS-99 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㊸ of IC201 (Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (CAR. -L)
Specified Value	4.38 ± 0.04 MHz

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	1	00	01	**Releasing of protect.**	
2	D	4F		Change the data with the PLAY and STOP buttons, and adjust the Y FM carrier frequency to the specified value.	Recording mode, no signal input
3	D	4F		Press the PAUSE button.	

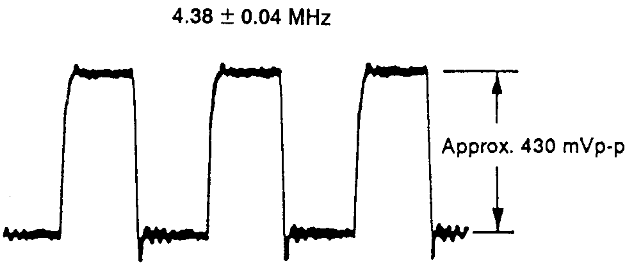


Fig. 7-48.

11. Hi8 mode Y FM carrier frequency adjustment (VS-99 board)

Purpose: Adjust the tape recording FM signal to the Hi8 specifications.

Adjustment error: (When frequency is high) Over modulation picture or poor S/N
(When frequency is low.) Blurred OA picture or poor resolution

Mode	REC
Signal	Non signal
Measurement Point	Pin ㊸ of IC201 (Y RF OUT)(JL428)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4E (CAR.–E)
Specified Value	6.00 ± 0.04 MHz

Adjusting method:

1) Insert a ME type tape, and check that the "Hi8" switch is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4E, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

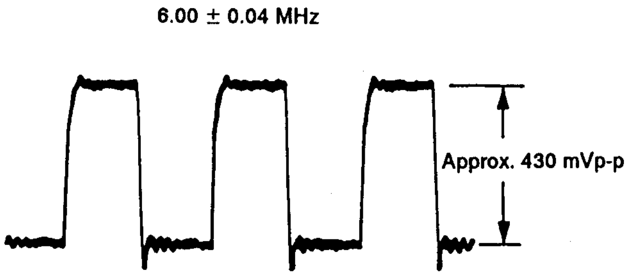


Fig. 7-49.

12. Hi8 mode Y FM deviation adjustment (VS-99 board)

Purpose: Adjusts the tape recording FM signal to the Hi8 specifications.

Adjustment error: (When deviation is too wide.) Too bright OA picture. Over modulation
(When deviation is too narrow.) Dark picture

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC 201 (DL IN 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	50 (DEV.–E)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment" and "PB Y Level Adjustment" have been completed.

Adjusting method:

1) Insert a ME type tape, and check that the "Hi8" switch is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification: A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 50, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote control unit.
8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

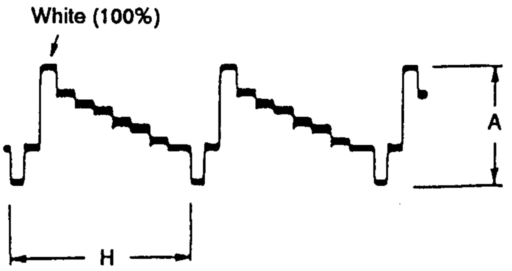


Fig. 7-49-1.

13. Chroma emphasis fo adjustment (VS-99 board)

Purpose: Remove variation of chroma emphasis filter (FL405) characteristics

Adjustment error: Boundaries of playback colors have different color.

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ㉔ of IC301
Measuring Instrument	Oscilloscope
Adjustment Element	FL302
Adjustment value	Minimum fo components

Connection:

1) Connect pin ㉔ of IC301 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1				Minimize the amplitude of the rear part of the red section of the chroma signal with FL302.	

Minimize the amplitude of the rear part of the red section

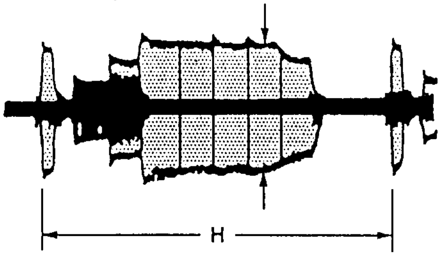


Fig. 7-50.

14. REC Y level adjustment (VS-99 board)

Purpose: Maintains a constant signal level of Y FM, chroma AFM and ATF signal when recording on tape.

Adjustment error: (When level is low.) Poor S/N of playback picture or loss of servo
(When level is high) Over modulation picture

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN002 (REC 2CH)
Measuring Instrument	Oscilloscope
Adjust Page	D
Adjust Address	52 (REC Y CONT (ME E)) 53 (REC Y CONT (MP E)) 54 (REC Y (ME L)) 55 (REC Y (MP L))
Specified Value	• ME E 250 ± 5mVp-p • MP E 225 ± 5mVp-p • ME L 240 ± 5mVp-p • MP L 215 ± 5mVp-p

Note: Use a MP type tape

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01

- ME tape Hi8 mode (ME E mode) adjustment

2) Insert the ME tape, and set the record mode.
3) Check that the Hi8 switch is at "Auto".
4) Change the data of page: D, address: 52, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.

- Hi8 MP tape Hi8 mode (MP E mode) adjustment

6) Insert the Hi8 MP tape, and set the record mode.
7) Check that the Hi8 switch is at "Auto".
8) Change the data of page: D, address: 53, and adjust so that the REC Y level (A) becomes the specified value.
9) Press the PAUSE button of the adjusting remote control unit.

- ME tape normal mode (ME L mode) adjustment

10) Turn the Hi8 switch off.
11) Insert the ME tape, and set the record mode.
12) Change the data of page: D, address: 54, and adjust so that the REC Y level (A) becomes the specified value.
13) Press the PAUSE button of the adjusting remote control unit.
14) Set the Hi8 switch to "Auto".

- MP tape normal mode (MP L mode) adjustment

15) Insert the MP tape, and set the record mode.
16) Change the data of page: D, address: 55, and adjust so that the REC Y level (A) becomes the specified value.
17) Press the PAUSE button of the adjusting remote control unit.

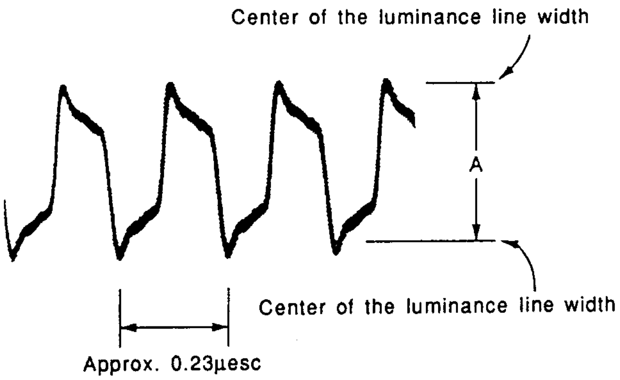

Center of the luminance line width
A
Center of the luminance line width
Approx. 0.23μesc

Fig. 7-51.

15. REC C level adjustment (VS-99 board)

Purpose: Maintains a constant chroma recording level on tape.
Adjustment error: (When level is low.) Poor S/N of OA picture
(When level is high) Poor Y S/N at darker color or white over modulation

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ⑤ of IC302 (REC C RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C (REC))
Specified Value	A=75 ± 5mV

Note: Use a MP type tape

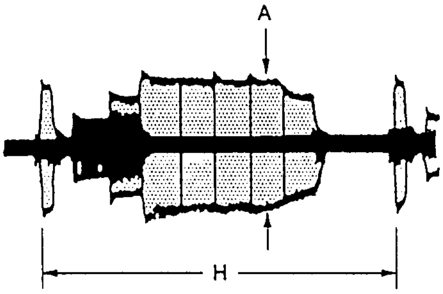


Fig. 7-52.

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	1	00	01	**Releasing of protect.**	
2	D	46		Change the data with the PLAY and STOP buttons, and adjust the amplitude (A) of the flat section of the "red" of the REC C level to the specified value.	Recording mode
3	D	46		Press the PAUSE button.	

16. REC L CONT Adjustment (VS-99 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ⑥ of CN002 (REC 2CH)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5C (REC L CONT (ME E SP)) 5D (REC L CONT (MP E SP)) 5E (REC L CONT (ME L SP)) 5F (REC L CONT (MP L SP)) 60 (REC L CONT (ME E LP)) 61 (REC L CONT (MP E LP)) 62 (REC L CONT (ME L LP)) 63 (REC L CONT (MP L LP))
Specified Value	ME tape Hi8 mode (ME E) A=44 ± 2mVp-p Hi8 MP tape Hi8 mode (MP E) A=27 ± 2mVp-p ME tape normal mode (ME L) A=42 ± 2mVp-p MP tape normal mode (MP L) A=34 ± 2mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing each data of address: 52 to address: 55 of page: D, set data: 00 to each address.
   (Minimizing the REC Y RF level)
- ME tape Hi8 mode (ME E mode) adjustment
3) Insert the ME tape, and set the record mode.
4) Check that the Hi8 switch is at "Auto".
5) Change the data of page: D, address: 5C, and adjust so that REC C RF level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.
- Hi8 MP tape Hi8 mode (MP E mode) adjustment
7) Insert the Hi8 MP tape, and set the record mode.
8) Check that the Hi8 switch is at "Auto".
9) Change the data of page: D, address: 5D, and adjust so that the REC C RF level (A) becomes the specified value.
10) Press the PAUSE button of the adjusting remote control unit.

Note: Check that the REC MODE switch is at "SP".

- ME tape normal mode (ME L mode) adjustment

11) Turn the Hi8 switch off.
12) Insert the ME tape, and set the record mode.
13) Change the data of page: D, address: 5E, and adjust so that the REC C RF level (A) becomes the specified value.
14) Press the PAUSE button of the adjusting remote control unit.
15) Set the Hi8 switch to "Auto".

- MP tape normal mode (MP L mode) adjustment

16) Insert the MP tape, and set the record mode.
17) Change the data of page: D, address: 5F, and adjust so that the REC C RF level (A) becomes the specified value.
18) Press the PAUSE button of the adjusting remote control unit.
19) Set data to address: 60, 61, 62, 63 of page: D as shown in the following table.
(Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
60	Same data as address: 5C
61	Same data as address: 5D
62	Same data as address: 5E+06
63	Same data as address: 5F

- Processing after adjustments

20) Set the data memorized at step 2) to each address from address: 52 to address: 55 of page: D. and press the PAUSE button of the adjusting remote control unit.

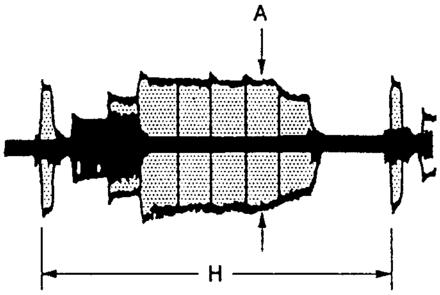


Fig. 7-53-1.

17. REC ATF level check (VS-99 board)

Purpose: Check that the tape recording ATF level is correct.
Adjustment error: Loss of servo. SP <---> LP identification error

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN002 (REC 2CH)
Measuring Instrument	Oscilloscope
Specified Value	A=8 ±2.0 mVp-p

Note 1: Use a MP type tape, and check that the "Hi8" switch is at "Auto".
2: Check that the REC MODE switch is at "SP".

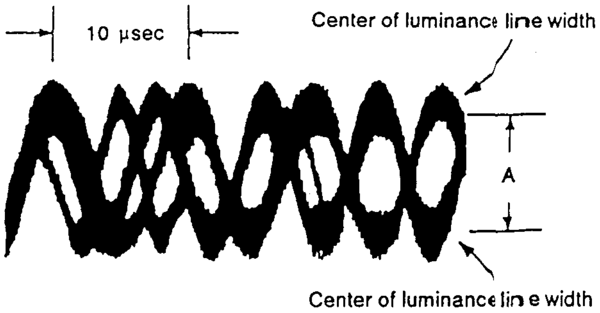


Table 7-53-2.

Connection:
1) Remove CN505 of the AU-149 board.

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1	1	00	01	**Releasing of protect.**	
2	D	53		Set the data to 00. (Minimizing the REC Y level) **Note:** Don't press the PAUSE button of the adjusting remote commander.	
3				Check that the REC ATF signal level (A) satisfies the specified value.	Recording mode
4				Turn the main power supply (7.5V) off	

18. REC AFM level check (VS-99 board)

Purpose: Check that the tape recording AFM level is correct.
Adjustment error: Poor audio S/N. Chroma beat on OA picture

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN002 (REC 2CH)
Measuring Instrument	Oscilloscope
Specified Value	A=9 ± 2.0 mVp-p

Note 1: Use a MP type tape, and check that the "Hi8" switch is at "Auto".

2: Do not insert anything into the audio input terminal (right). (Monaural record mode)

Connection:

1) Connect Pin ⑨ of IC504 and GND with a 0.01 μ F capacitor (1-101-004-00).

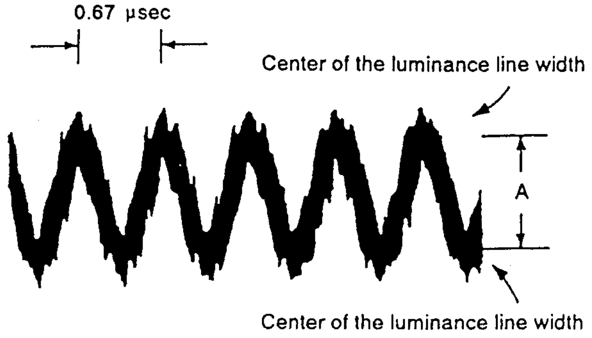

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 7-54.

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2	D	53		Set the data to 00. (Minimizing the REC Y level) **Note:** Don't press the PAUSE button of the adjusting remote commander.	
3				Check that the REC AFM signal level (A) satisfies the specified value.	Recording mode
4				Turn the main power supply (7.5V) off	

19. INDEX MARKER system adjustment

1) Playback VCO Free Osillation Frequency Adjustment (VS-99 board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑧ of IC520
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	7F (INDEX VCO)
Specified Value	11.50 ± 0.05 MHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Connection:

1) Connect Pins ① and ⑥ of IC520 with a jumper wire.
2) Connect the Q523 collector and GND with a jumper wire.

Adjusting method:

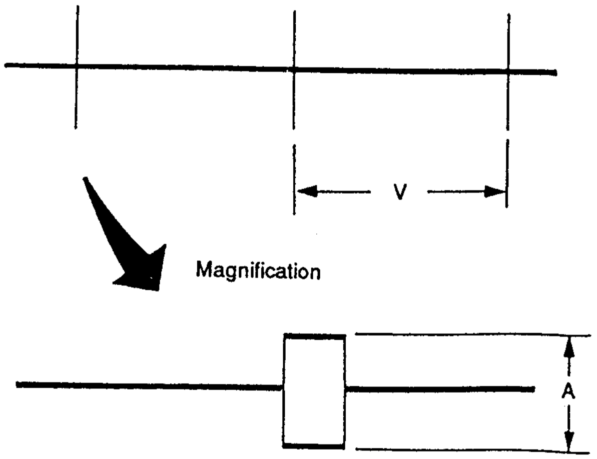
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7F, and adjust the oscillation frequency to the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

2) REC PCM Level Check (VS-99 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of IC001
Measuring Instrument	Oscilloscope
Specified Value	A=240 ± 100 mVp-p

Checking method:

1) Check that the REC PCM level (A) satisfies the specified value.

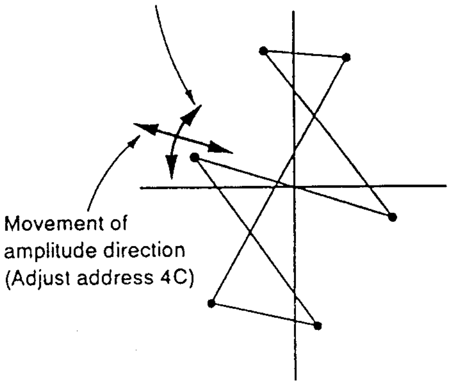


20. Chroma comb filter fine adjustment (VS-99 board)

Purpose: Check that the adjustment point in item 6 has not moved in playback mode. Adjust when necessary.

Adjustment error: Horizontal chroma streaking on PB picture

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV161
Adjustment Page	D
Adjustment Address	4C (C COMB)
Specified Value	Minimum color luminance point movement when the "Edit" switch is turned on/off


Movement of phase direction (Adjust RV161)
Movement of amplitude direction (Adjust address 4C)

HUE: Below 1°
Amplitude: Below 2%

Fig. 7-55.

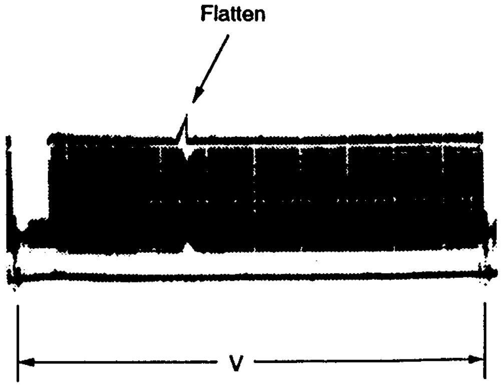
Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	1	00	01	**Releasing of protect.**	
2				Minimize the movements of the color luminance point when the edit is on/off with RV161.	Playback mode
3	D	4C		Change the data with the PLAY and STOP buttons, and minimize the movements of the color luminance point when the edit is on/off.	Playback mode
4	D	4C		Press the PAUSE button.	
5				Repeat steps 2 to 4.	

21. YD Adjustment (VS-99 board)

Mode	Playback
Signal	Color bar tape with dropout (Note 1)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7C (YD ADJ)
Specified Value	Dropout section should be flat

Note 1: A tape with continuous dropout is made by scratching the magnetic section of a color bar tape which is running with the tip of a precision driver.



Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 66, and flatten the dropout section.
3) Press the PAUSE button of the adjusting remote control unit.

3-7. AUDIO SYSTEM ADJUSTMENT

- Adjust using the color bar signal as the video signal input.

[Connecting the measuring equipments for audio]
In addition to the measuring equipments for the video system, connect the measuring equipments for the audio system as shown in Fig. 7-56, and adjust with the power supply switch at "Player". Inputting signal and setting REC mode are described in section page 7-49 3-1-3. Mode of HiFi sound select STEREO.
(How to setting: Refer to page 1-13, please changing the Mode Settings.)

Note: 1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise.
2) Be sure to insert the plug (shorting plug or dummy plug, etc.,) into the audio output (or input/output) terminal (right). If the plug is not inserted, the monaural mode will be set, and correct adjustments cannot be carried out.
(Monaural mode)
During recording·······REC AFM RF 1.7 MHz carrier will not be output.
During playback ·······The L+R signal will be output from the audio output (or input/output) terminal (left).
3) Adjustments for channel R in adjustments for both channels L and R are in the [ ].

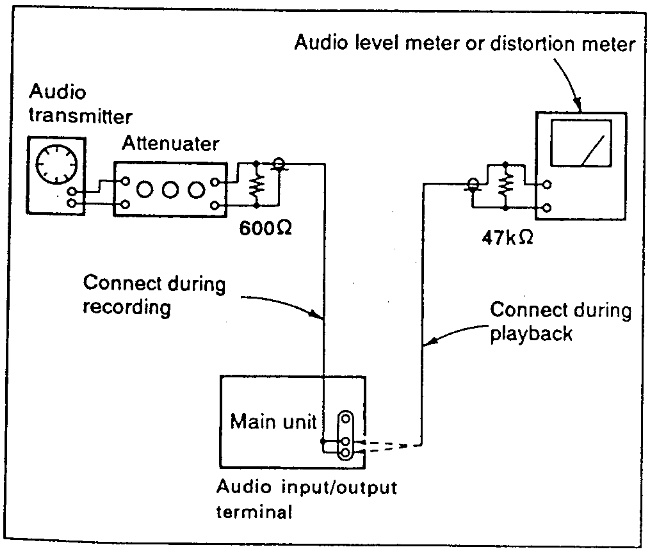


Fig. 7-56.

[Adjusting Procedure]
1) 1.5 MHz recording level check
2) E-E output level check
3) REC matrix L-R adjustment
4) REC matrix L+R check
5) 1.5 MHz deviation adjustment
6) 1.7 MHz deviation adjustment
7) Overall level characteristics, distortion rate check
8) Separation check
9) Overall noise level check

1. 1.5 MHz record level check (AU-149 board)

Purpose : Record current check

Mode	Record (Monaural)
Signal	No signal
Measurement Point	Pin ㉙ of CN802 (REC AFM RF)
Measuring Instrument	Oscilloscope
Specified Value	A=20 ± 5 mV

Note: Do not insert the plug into the right audio output terminal.

Checking method:

Order	Procedure
1	Read the center of the luminance line width and note down the read level.

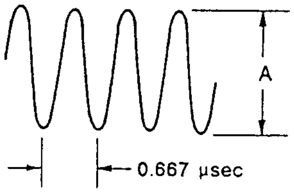


Fig. 7-57.

2. E-E output level check (AU-149 board)

Purpose : E-E output level check

Mode	Record
Signal	400 Hz, –7.5 dBs right audio input terminal [left][right]
Measurement Point	Pin ㊾ of IC801 [Pin ㊿ of IC801]
Measuring Instrument	Oscilloscope
Specified Value	$925\ ^{+240}_{-190}$ mVp-p (–7.5±2 dBs)

3. REC matrix L – R adjustment (AU-149 board)

Purpose : Record matrix separation adjustment. Error in this adjustment value means poor OA separation.

Mode	Record
Signal	400 Hz, -7.5 dBs Input to both left and right terminals of the audio input termnial
Measurement Point	Pin ⑤ of IC801
Measuring Instrument	Oscilloscope (Use 1:1 probe)
Adjustment Page	D
Adjustment Address	78 (REC/PB MX (REC))
Specified Value	0±20 mVp-p

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2	D	78		Change the data with the PLAY and STOP buttons, and minimize the 400 Hz signal level.	
3	D	78		Press the PAUSE button.	

4. REC matrix L+R check (AU-149 board)

Mode	Record
Signal	1. 400 Hz, -7.5 dBs : Audio input terminal (left) No signal: Audio input terminal (right) 2. No signal: Audio input terminal (left) 400 Hz, -7.5 dBs: Audio input terminal (right)
Measurement Point	Pin ㊹ of IC801
Measuring Instrument	Oscilloscope
Specified Value	The level difference when the signal is input to only the left terminal and when the signal is input to only the right terminal should be 0 ± 20 mVp-p.

Note: When measuring the signal level of Pin ㊹ of IC801, wait for more than 1 minute after signal input before measuring. (To regulate the AGC.)

Checking method:

Order	Procedure	Conditions
1	Input the 400 Hz, -7.5 dBs signal only to the left audio input terminal. (Insert the shorting plug to the right audio input terminal.)	
2	Read the 400 Hz signal level of Pin ㊹ of IC801, and note it down. (Approximately 400 mVp-p)	Input signal to left channel only
3	Input the 400 Hz, -7.5 dBs signal only to the right audio input terminal. (Insert the shorting plug to the left audio input terminal.)	
4	Check that the 400 Hz signal level of Pin ㊹ of IC801 is (the value noted down at step 2) ±20 mVp-p.	Input signal to right channel only

5. 1.5 MHz deviation adjustment

Purpose : 1.5 MHz deviation adjustment. Error in this adjustment value means loss of tape interchangeability.

Mode	Playback
Signal	Alignment tape: For checking operatioons (WR5-5CSP)
Measurement Point	Left or right audio output terminal
Measuring Instrument	Oscilloscope, level meter
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2	D	7B		Change the data with the PLAY and STOP buttons, and adjust the 400 Hz signal level to the specified value.	WR5-5CSP playback mode
3	D	7B		Press the PAUSE button.	

6. 1.7 MHz deviation adjustment (AU-149 board)

Purpose : 1.7 MHz deviation adjustment. Error in this adjustment value means incorrect interchange PB level, and poor separation.

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9CS) Bilingual (Monoscope) section
Measurement Point	1. Pin ㊾ of IC801 2. Pin ㊿ of IC801
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7D (1.7 DEV)
Specified Value	8 ±0.05 graduation

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
1	**1**	**00**	**01**	**Releasing of protect.**	
2				Connect the oscilloscope to Pin ㊾ of IC801.	
3				Adjust the 400 Hz signal amplitude to the 8.0 scale using the VOLT/DIV knob of the oscilloscope.	WR5-9CS playback mode
4				Connect the oscilloscope to Pin ㊿ of IC801.	
5	D	7D		Change the data with the PLAY and STOP buttons, and adjust the amplitude of the 1 kHz signal to the 8 ± 0.05 graduation. (Adjust with the center of the luminance line width.)	WR5-9CS playback mode
6	D	7D		Press the PAUSE button.	

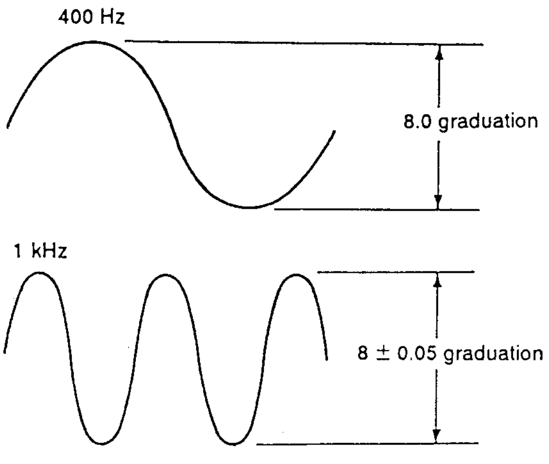


Fig. 7-58.

7. Overall level characteristics, distortion rate check

Purpose : Distortion check

Mode	Self record/playback
Signal	400 Hz, –7.5 dBs: Left audio input terminal [right] No signal: Right audio input terminal [left]
Measurement Point	Left audio output terminal [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: −7.5 ± 2 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [ ] contains points to be measured when checking the right channel.
2) Value when the 200Hz to 6 kHz band pass filter is used.

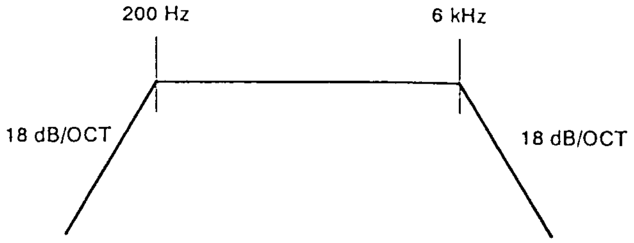


Fig. 7-59.

Checking method:

Order	Procedure
1	Input the 400 Hz, –7.5 dBs signal only to the left audio input terminal [right]. **Note:** Be sure to insert the shorting plug to the terminal of non-signal input.
2	Record the signal.
3	Remove the input signal, and playback the recorded section.
4	Check that the 400 Hz signal level of the left audio output terminal [right] is −7.5±2 dBs, and that the distortion rate is below 0.8% (Note 2)

8. Separation check

Purpose : Separation check

Mode	Self recording/playback
Signal	No signal: Left audio input terminal [right] 400 Hz, −7.5 dBs: Right audio input terminal [left]
Measurement Point	Left audio output terminal [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –27.5 dBs

Note: The [ ] contains points to be measured when checking the right channel.

Checking method:

Order	Procedure
1	Insert a shorting plug into the left audio input terminal [right], and input a 1 kHz, –7.5 dBs signal only to the right audio input terminal [left].
2	Record the signal.
3	Remove the input signal.
4	Play back the recorded section.
5	Check that the cross talk level (1 kHz) of the left audio output terminal [right] is below –27.5 dBs.

9. Overall noise level check

Purpose : Noise level check

Mode	Self record/playback
Signal	No signal: Left and right audio input terminals
Measurement Point	Left audio output terminal [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below −67.5 dBs

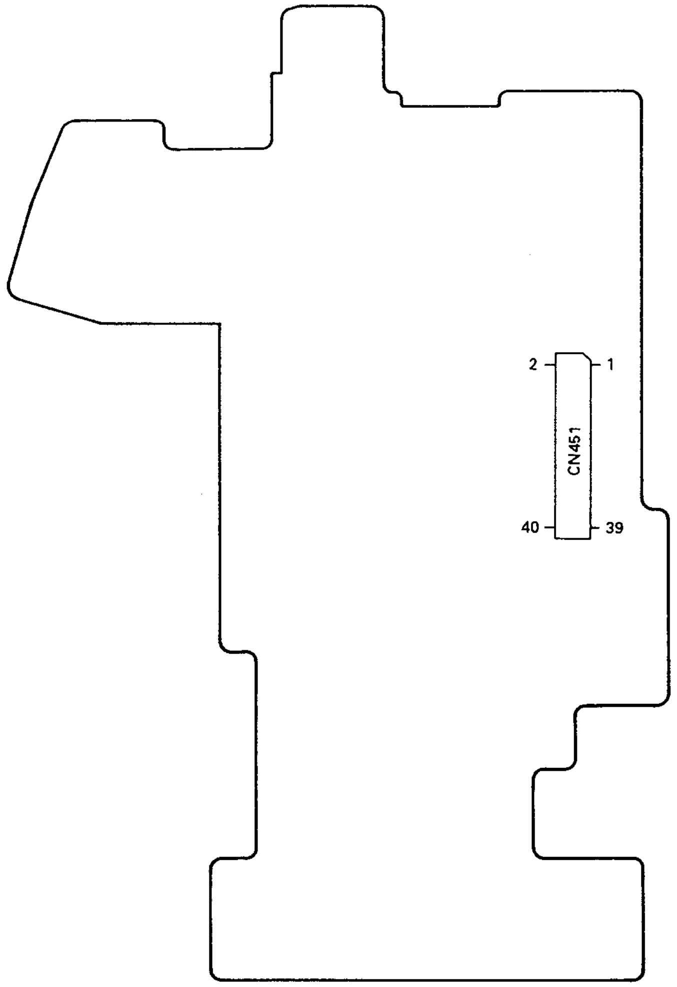
Note: The [ ] contains points to be measured when checking the right channel.

Checking method:

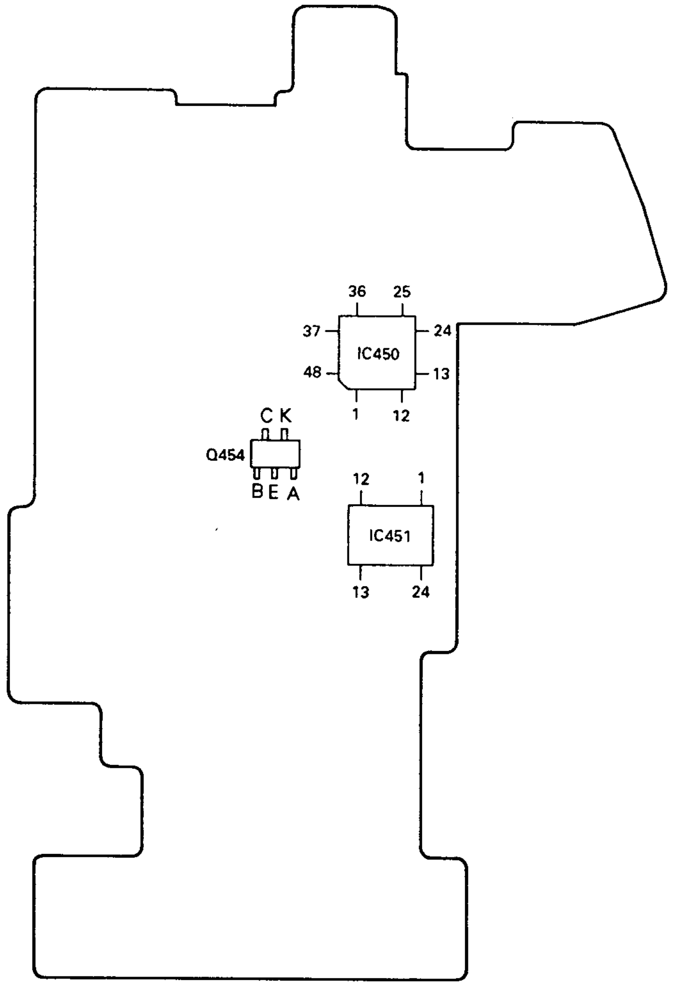
Order	Procedure
1	Insert the shorting plug to both the left and right audio input terminals.
2	Record.
3	Remove the shorting plug.
4	Play back the recorded section.
5	Check that the noise level of the left audio output terminal [right] is below −67.5 dBs.

3-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

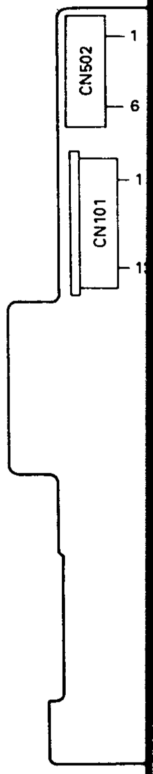
DD-62 BOARD (COMPONENT SIDE)



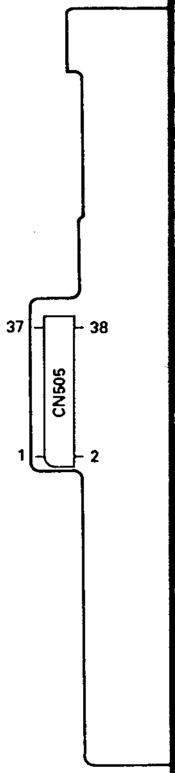
DD-62 BOARD (CONDUCTOR SIDE)



VS-99 BOAR



VS-99 BOAR



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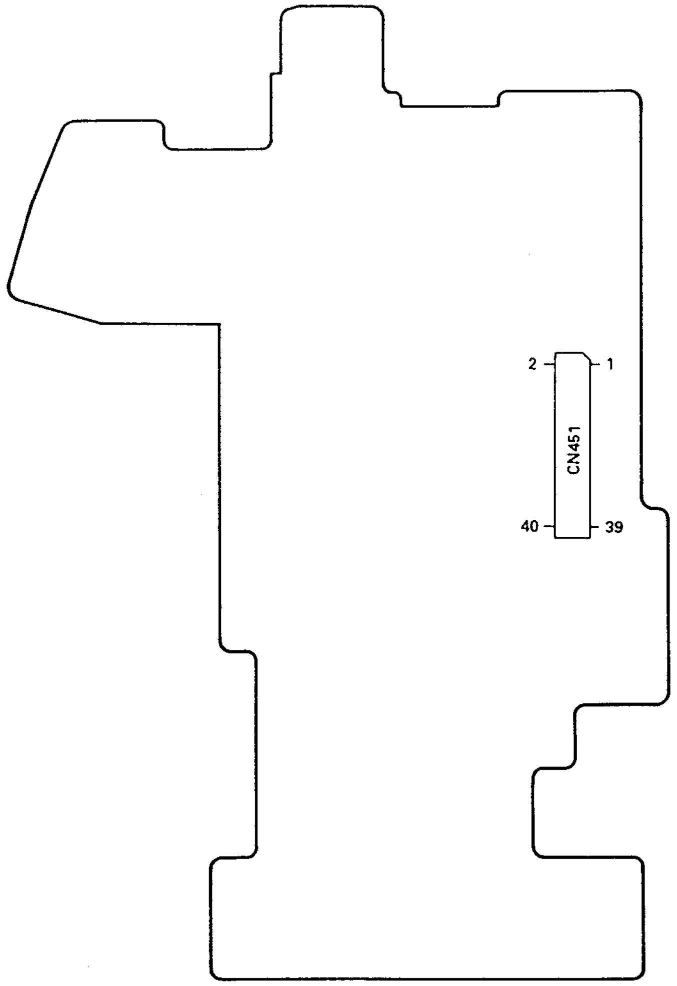
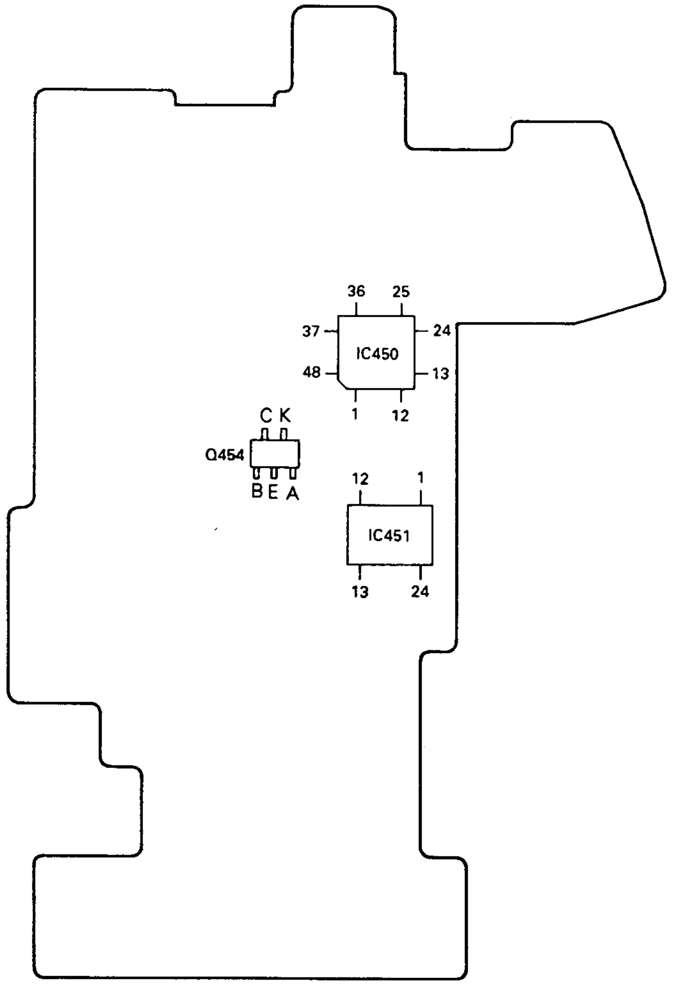
3-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

DD-62 BOARD (COMPONENT SIDE)



CN451
2
1
40
39

DD-62 BOARD (CONDUCTOR SIDE)



IC450
36
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37
24
48
13
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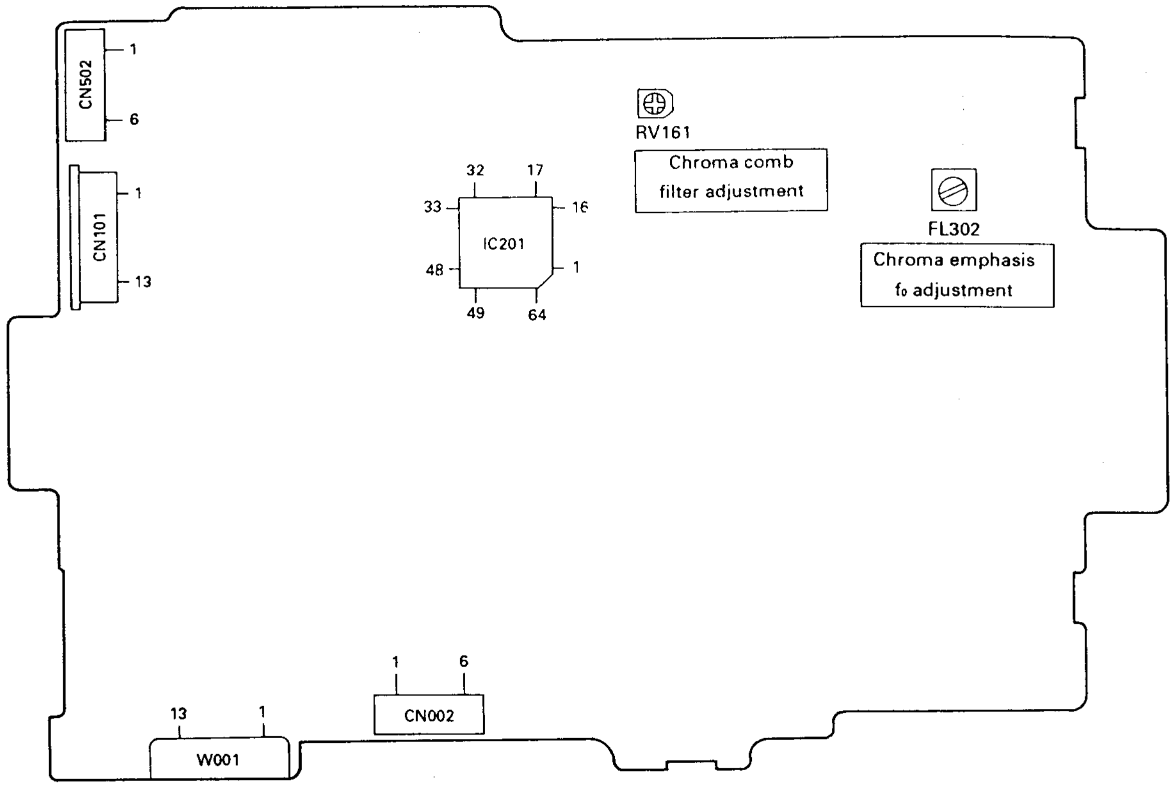
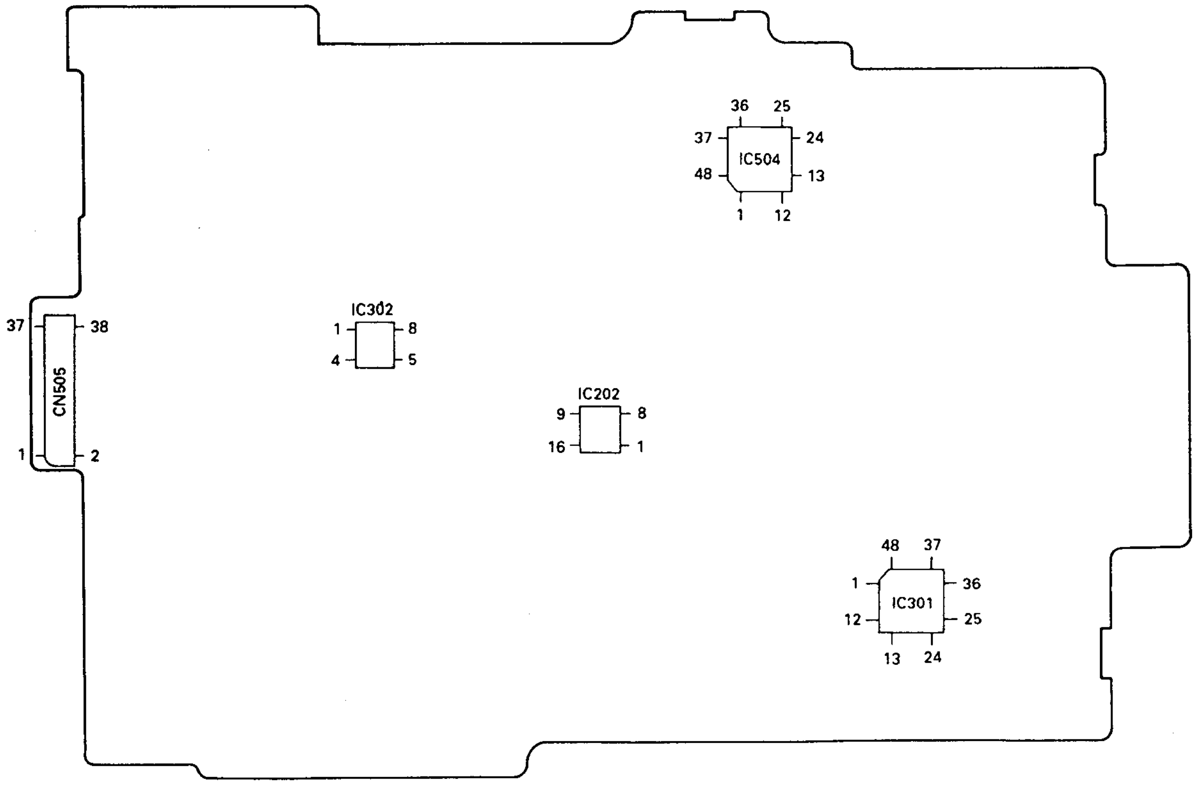
Q454
C K
B E A
IC451
12
1
13
24

VS-99 BOARD (COMPONENT SIDE)



CN502
1
6
CN101
1
13
IC201
32
17
33
16
48
1
49
64
RV161
Chroma comb filter adjustment
FL302
Chroma emphasis f₀ adjustment
W001
13
1
CN002
1
6

VS-99 BOARD (CONDUCTOR SIDE)



IC504
36
25
37
24
48
13
1
12
CN505
37
38
1
2
IC302
1
8
4
5
IC202
9
8
16
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IC301
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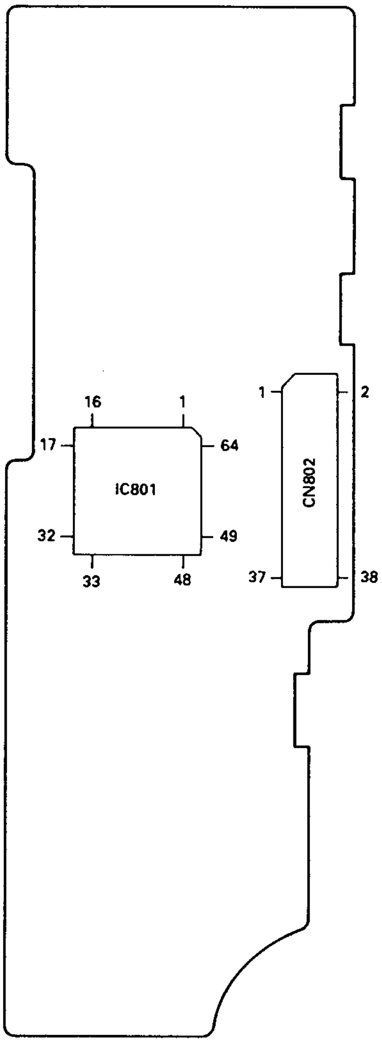
36
12
25
13
24

AU-149 BOARD (COMPONENT SIDE)

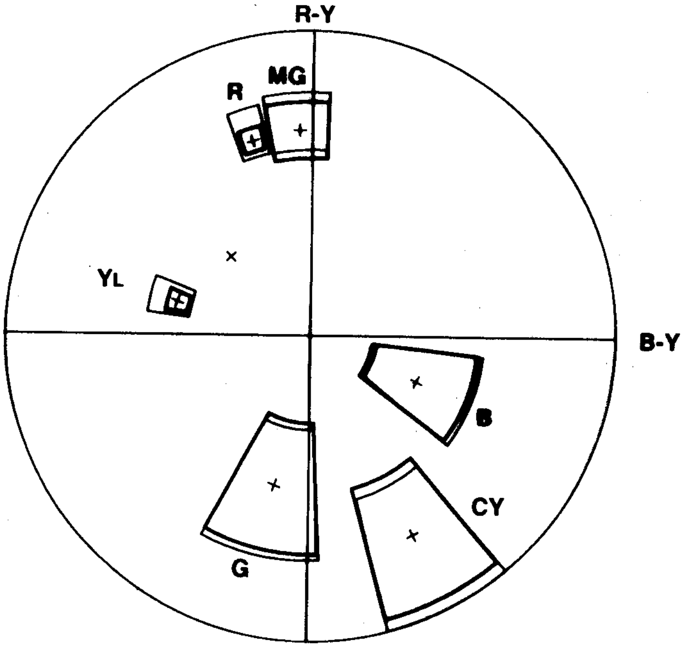

16
1
17
64
IC801
32
49
33
48
1
2
CN802
37
38

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

CCD-TR2000E

⊞ :WEIGHT OFF MODE

□ :WEIGHT ON MODE


R-Y
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MG
YL
B-Y
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CY
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CCD-TR2000E
RMT-702

SONY

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

CORRECTION-1

Correct your service manual as shown below.
(96-023)

Correct the SUPPLEMENT-1 (9-973-514-81) item 22. Steady shot function Adjustment as follows.

✎ : Correct errors portion.

⟨ PAGE 12 ⟩

22. Steady shot function Adjustment

Adjustment procedure

Sequence	Page	Address	Data	Adjustment procedure	Conditions
5				Now measure how manay micro-seconds the black video line has moved horizontally on the monitor. Take the movement distance as "t1". Use the value shown in the sensor sensitivity display which is written on the SE002 of the YP-13 board, and the value of the above movement distance "t1" to calculate as follows: Horizontal = $\frac{2.68}{\text{Movement distance t1 } (\mu\text{sec})} \times \frac{0.97}{\text{Sensor sensitivity}} \times 103$	

⟨ PAGE 13 ⟩

Sequence	Page	Address	Data	Adjustment procedure	Conditions
10				Use the value shown in the sensor sensitivity display which is written on the SE001 of the YP-13 board and the value of the above movement distance "t2" to calculate as follows: Vertical = $\frac{1.30}{\text{Movement distance t2 (msec)}} \times \frac{0.97}{\text{Sensor sensitivity}} \times 97$	

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(Osaki East)

Sony Corporation
Personal A&V Products Company

9-973-514-91

CCD-TR2000E
RMT-702

SONY
SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

SUPPLEMENT-2

File this supplement with the Service Manual.

- The zoom lens (VCL-6110WF) which has been used, is discontinued of its production. The VAP block (A-7030-482-A) and the lens block (3-708-805-01) only are supplied as the assembly parts.

page	OLD	NEW
5-8	Ref. No. Part No. Description 417 1-547-635-21 LENS, ZOOM (VCL-6110WF)	417 not supplied

9-973-514-82

Sony Corporation
Consumer A&V Products Company
Personal A&V Products Div.

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Quality Engineering Dept.

CCD-TR2000E
RMT-702

SONY
SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

SUPPLEMENT-1

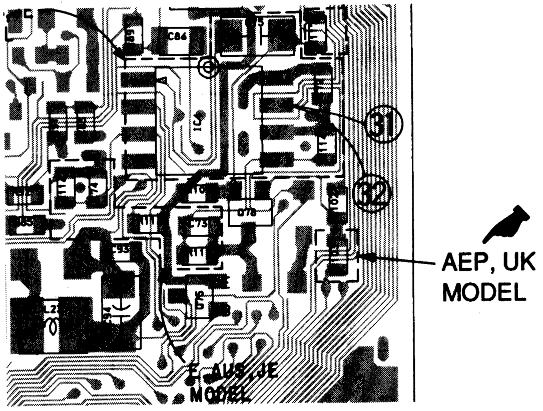
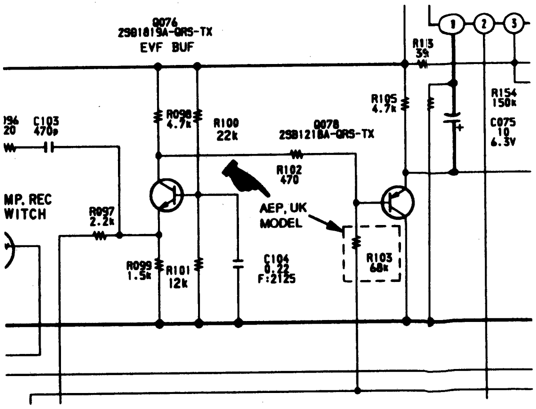
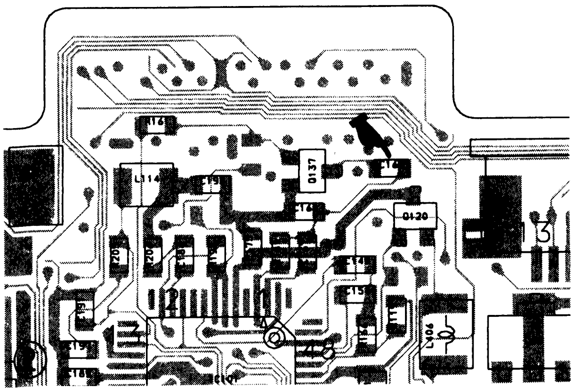
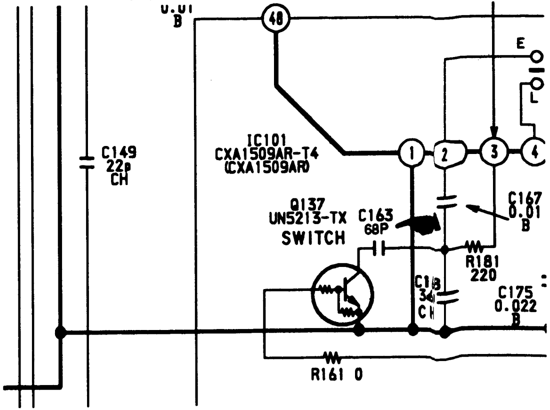
File this supplement with the Service Manual.

Changes of Printed Wiring Boards, Schematic Diagrams, and Adjustments.

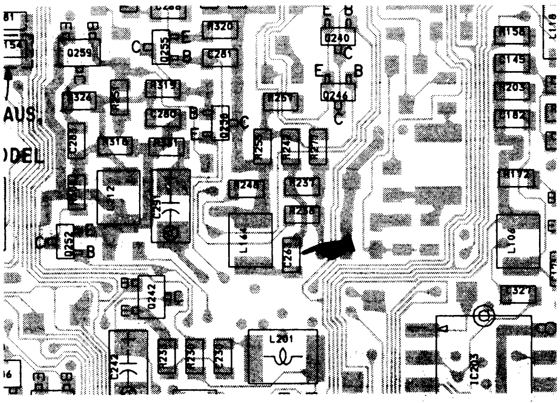
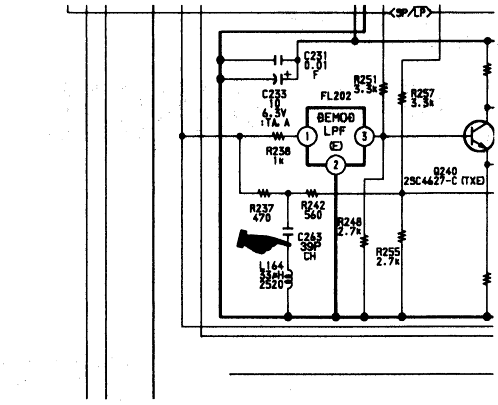
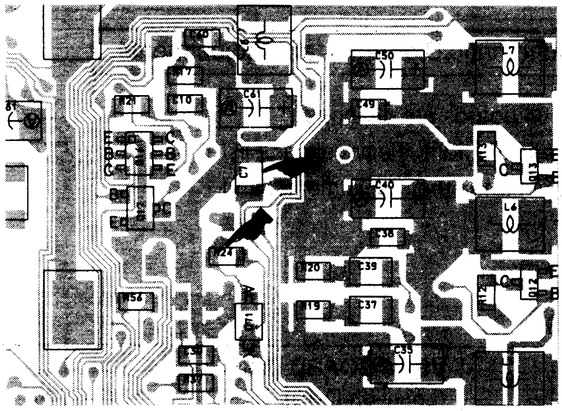
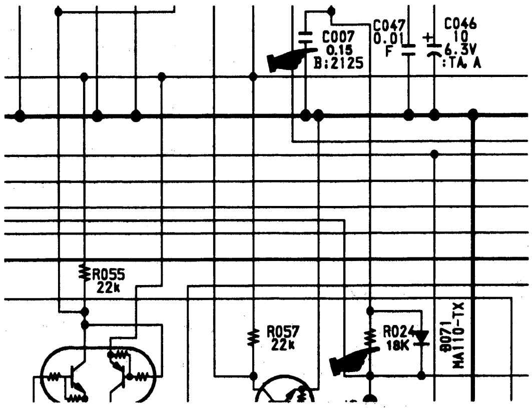
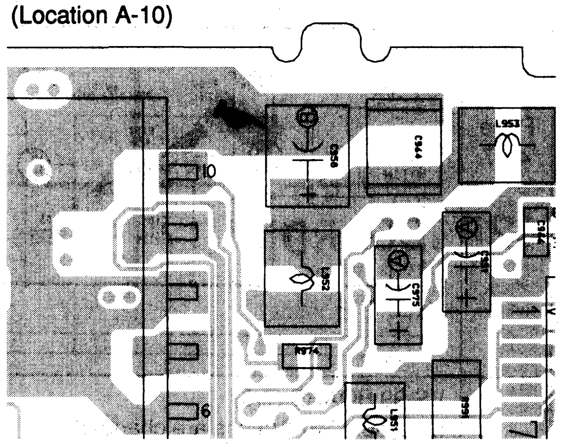
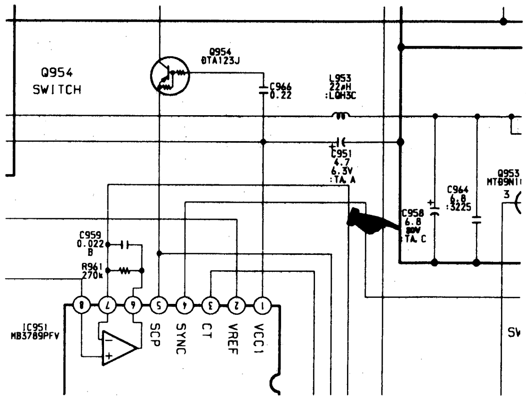
- VS-99, VC-132, VF-69P, MA-184 boards are changed.
  (Printed Wiring boards, schematic diagram, electrical parts list.)
- Change of Anti-Shake adjustment and other adjustments, and correction.

☛ : changed portion

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Page 4-14	VS-99 BOARD (COMPONENT SIDE) (Location C-7)  C84 31 32 Q78 AEP, UK MODEL E, AUS, JE MODEL	Page 4-27	VS-99 BOARD (3/6) (Location D-19)  Q076 2SB1819A-QRS-TX EVF BUF R113 39k R154 150k R105 4.7k C075 10 6.3V C103 470p R098 4.7k R100 22k Q078 2SB1218A-QRS-TX R102 470 MP. REC WITCH R097 2.2k AEP, UK MODEL R099 1.5k R101 12k C104 0.22 F:2125 R103 68k 1 2 3
Page 4-14	VS-99 BOARD (COMPONENT SIDE) (Location A-5) (Values are changed)  L114 Q137 Q120 L406	Page 4-22	VS-99 BOARD (2/6) (Location J-8) (Values are changed)  0.01 B 48 E L C149 22p CH IC101 CXA1509AR-T4 (CXA1509AR) 1 2 3 4 Q137 UN5213-TX SWITCH C163 68P C167 0.01 B R181 220 C168 34 CH C175 0.022 B R161 0

☛ : changed portion (Values are changed)

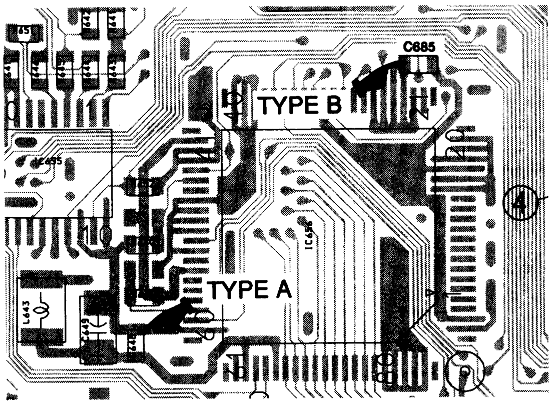
Page 4-15	VS-99 BOARD (CONDUCTOR SIDE) (Location C-10)  Q259 Q255 R320 R281 Q240 Q246 R324 R313 R280 R316 R251 R248 R237 R238 L164 C263 Q252 Q242 L201 IC203 L106 R156 R182 AUS DEL	Page 4-17	VS-99 BOARD (1/6) (Location R-5)  SP/LP C231 0.01 F C233 10 6.3V :TA A FL202 BEMOD LPF R251 3.3k R257 3.3k R238 1k R237 470 R242 560 R248 2.7k C263 39P CH L164 33μH 2520 R255 2.7k Q240 2SC4627-C (TXE)
Page 4-15	VS-99 BOARD (CONDUCTOR SIDE) (Location B-13)  C50 C61 C49 C40 C38 C39 C37 C35 L7 L6 Q13 Q12	Page 4-30	VS-99 BOARD (4/6) (Location K-10)  C007 0.15 B:2125 C047 0.01 F C046 10 6.3V :TA A R055 22k R057 22k R024 18K D071 MA110-TX
Page 4-74	VF-69P BOARD (COMPONENT SIDE) (Location A-10)  L953 C958 C964 L952 C975 R974 L951 10 6	Page 4-70	VF-69P BOARD (Location I-7)  Q954 DTA123J Q954 SWITCH C966 0.22 L953 22μH :LQH3C C951 4.7 6.3V :TA A C958 6.8 10V TA C C964 6.8 :3225 Q953 C959 0.022 B R961 270k IC951 MB3789PFV SCP SYNC CT VREF VCC1

☛ : changed portion

Page 4-44

Note: *1)

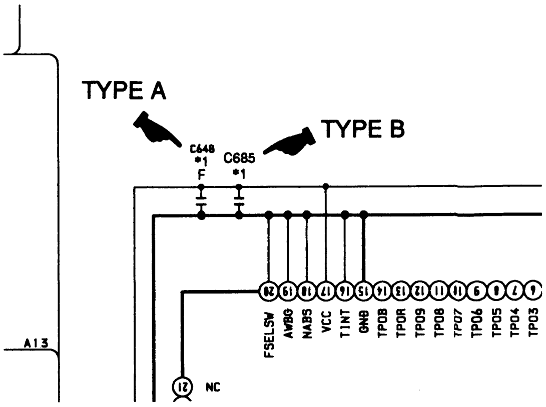
VC-132 BOARD (COMPONENT SIDE)
(Location G-4)


C685
TYPE B
TYPE A
IC604
L643
C649

Page 4-53

Note: *1)

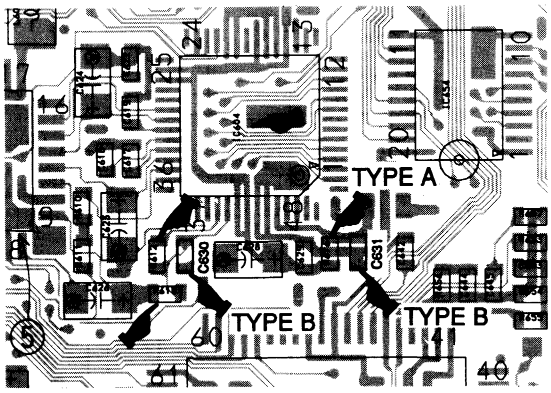
Vc-132 BOARD
(Location H-9)


TYPE A
TYPE B
C648 *1 F
C685 *1
A13
NC
FSELSW
AWBO
NABS
VCC
TINT
GND
TPOB
TPOR
TPO9
TPO8
TPO7
TPO6
TPO5
TPO4
TPO3

Page 4-46

Note: *1)

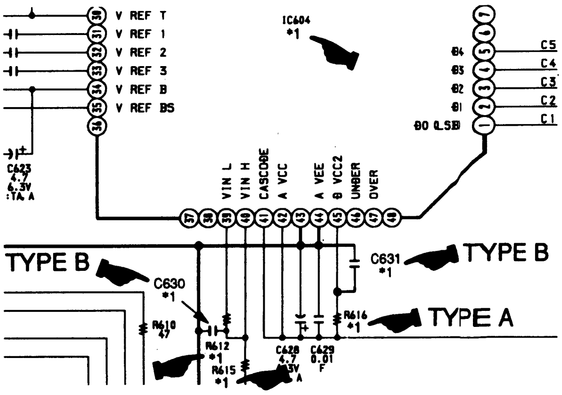
VC-132 BOARD (CONDUCTOR SIDE)
(Location H-10)


TYPE A
TYPE B
TYPE B
C630
C631
IC604

Page 4-51

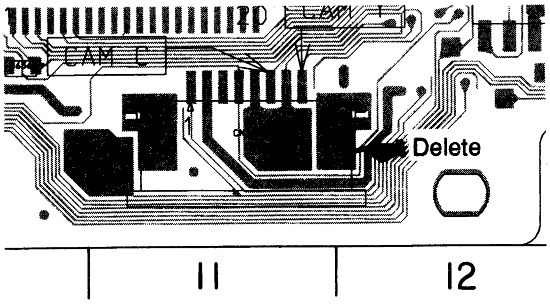
Note: *1)

VC-132 BOARD (1/4)
(Location E-22)


V REF T
V REF 1
V REF 2
V REF 3
V REF B
V REF BS
IC604 *1
B4
B3
B2
B1
B0 LSB
C5
C4
C3
C2
C1
VIN L
VIN H
CASCODE
A VCC
A VEE
B VCC2
UNDER
OVER
TYPE B
C630 *1
C631 *1
TYPE B
R616 *1
TYPE A
R610 47
R612 *1
R615 *1
C628 4.7
C629 0.01 F

Page 4-46

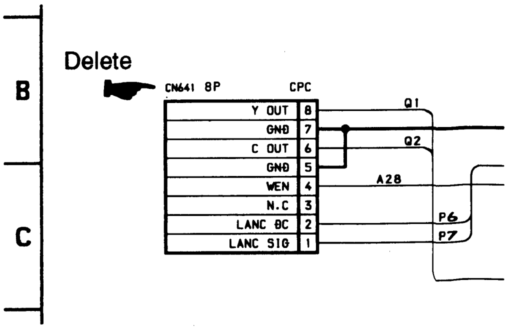
VC-132 BOARD (CONDUCTOR SIDE)
(Location J-10)


CAM C
Delete
11
12

(CN641 is not mounted.
Lands are used as check land during adjustment.)

Page 4-53

VC-132 BOARD (2/4)
(Location B-2)


Delete
B
C
CN641 8P
CPC
Y OUT 8
GND 7
C OUT 6
GND 5
WEN 4
N.C 3
LANC DC 2
LANC SIG 1
Q1
Q2
A28
P6
P7

(CN641 is not mounted.
Lands are used as check land during adjustment.)

Note:

*1) IC604 has two type:

Ref.	TYPE A	TYPE B
IC604	CXA1577R-T4	AD875JST-REEL
C630	No Mount	22P
C631	No Mount	0.1
C648	0.01	No Mount
C685	No Mount	0.01
R612	22	0
R615	0	68
R616	0	No Mount

7. ADJUSTMENTS

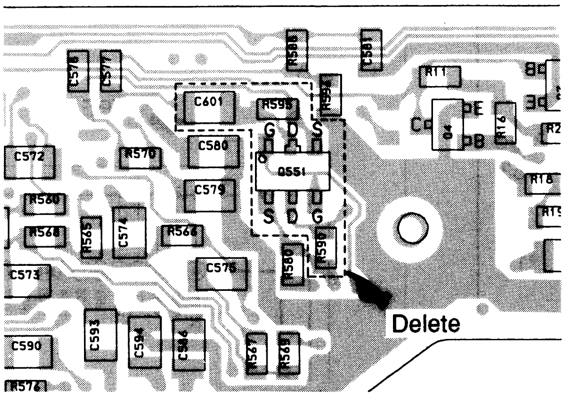
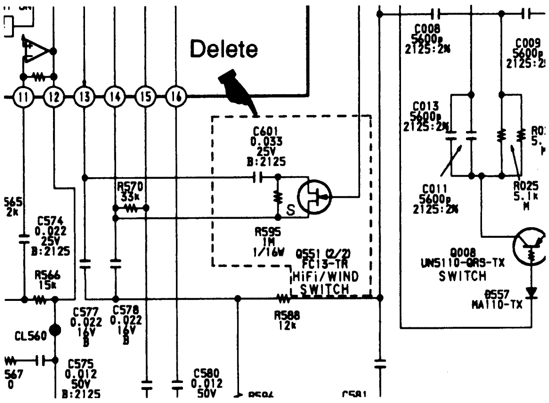
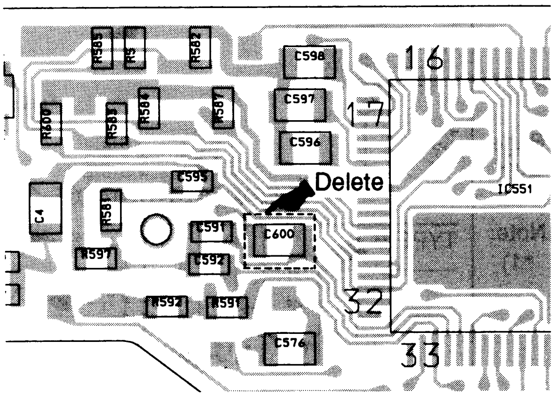
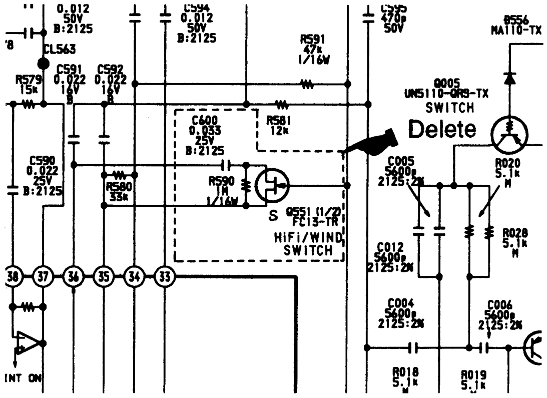
1-1-5. Page F Address List

<Page 7-7 >

Address	VC-132 BOARD IC604 TYPE	Adjustment data	
		Initial value	Memo column
36	CXA1577R-T4	00	00
	AD875JST-REEL	02	02

☛ Table 7-2 (2).

☛ : changed portion

Page 4-84 Note: *2)	MA-184 BOARD (COMPONENT SIDE) (Location B-5) 	Page 4-82 Note: *2)	MA-184 BOARD (Location I-11) 
Page 4-84 Note: *2)	MA-184 BOARD (CONDUCTOR SIDE) (Location B-8) 	Page 4-82 Note: *2)	MA-184 BOARD (Location C-11) 

Note:

*2) In accordance with the above changes, change the following "D" page data.

7. ADJUSTMENTS

22. Page D address list

< Page 7-68 >

Address	Adjustment data	
	Internal value	Memo column
7A	☛ 70	70 ☛

Table 7-8 (3).

☛ : changed portion

5-2. ELECTRICAL PARTS LIST

<Page 5-13>

C600 1-163-989-11 CERAMIC CHIP 0.033uF 10% 25V

Delete ☛

C601 1-163-989-11 CERAMIC CHIP 0.033uF 10% 25V

Delete ☛

<Page 5-14>

Q551 8-729-010-80 TRANSISTOR FC13

Delete ☛

R590 1-216-857-11 METAL CHIP 1M 5% 1/16W

Delete ☛

R595 1-216-857-11 METAL CHIP 1M 5% 1/16W

Delete ☛

<Page 5-15>

C630 1-162-919-11 CERAMIC CHIP 22PF 5% 50V(TYPE B) *1

Add ☛

C631 1-164-360-11 CERAMIC CHIP 0.1uF 16V(TYPE B) *1

Add ☛

C648 1-162-974-11 CERAMIC CHIP 0.01uF 50V(TYPE A) *1

C685 1-162-974-11 CERAMIC CHIP 0.01uF 50V(TYPE B) *1

Add ☛

<Page 5-16>

CN641 1-691-487-21 CONNECTOR, FFC/FPC 8P

Delete ☛

IC604 8-752-060-50 IC CXA1577R-T4 (TYPE A) *1

IC604 8-759-173-24 IC AD875JST-REEL(TYPE B) *1

Add ☛

<Page 5-17>

R612 1-216-801-11 METAL CHIP 22 5% 1/16W(TYPE A) *1

R612 1-216-864-11 METAL CHIP 0 5% 1/16W(TYPE B) *1

Add ☛

R615 1-216-864-11 METAL CHIP 0 5% 1/16W(TYPE A) *1

R615 1-216-807-11 METAL CHIP 68 5% 1/16W(TYPE B) *1

Add ☛

R616 1-216-864-11 METAL CHIP 0 5% 1/16W(TYPE A) *1

<Page 5-22>

C958 1-104-916-11 TANTAL. CHIP 6.8uF 20% 20V

<Page 5-23>

C007 1-164-492-11 CERAMIC CHIP 0.15uF 10% 16V

<Page 5-24>

C163 1-162-925-11 CERAMIC CHIP 68PF 5% 50V

C263 1-162-922-11 CERAMIC CHIP 39PF 5% 50V

<Page 5-29>

R024 1-216-836-11 METAL CHIP 18K 5% 1/16W

<Page 5-30>

R103 1-216-843-11 METAL CHIP 68K 5% 1/16W (AEP,UK)

<Page 5-35>

SE001 1-810-725-31 SENSOR, ANGULAR VELOCITY(PS SENSOR)

SE002 1-810-725-41 SENSOR, ANGULAR VELOCITY(YS SENSOR)

Note:

*1) IC604 has two type:

Ref.	TYPE A	TYPEB
IC604	CXA1577R-T4	AD875JST-REEL
C630	No Mount	22P
C631	No Mount	0.1
C648	0.01	No Mount
C685	No Mount	0.01
R612	22	0
R615	0	68
R616	0	No Mount

☛ : changed portion

7. ADJUSTMENTS

< Page 7-4 >

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.

2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   (In this case don't move the lens.)

☛

1-1-5. Page F Address List

<Page 7-9 >

Address	Adjustment data	
	Initial value	Memo column
6F	☛ 40	40 ☛
70	☛ 02	02 ☛
71	☛ 30	30 ☛

Table 7-2 (4).

<Page 7-11 >

Address	Adjustment data	
	Initial value	Memo column
E8	☛ 79	79 ☛
E9	00	00 ☛ Add
EA	00	00 ☛ Add
EB	00	00 ☛ Add
EC	00	00 ☛ Add

Table 7-2 (6).

< Page 7-12 >

Address	Adjustment data	
	Initial value	Memo column
ED	00	00 ☛ Add
EE	00	00 ☛ Add
EF	00	00 ☛ Add

Table 7-2 (7).

< Page 7-14 >

1-1-7. Data Processing

(Addition)

[How to Convert Decimal Numbers to Hexadecimal Numbers]

Divide the data into the following three categories. The conversion method is different for each category.

(1) 0 – 255 → 00h – FFh
(2) 256 – 4095 → 0100h – 0FFFh
(3) 4096 – 65536 → 1000h – FFFFh

If the value is in range (1):

1) Divide the decimal number by 16, giving value A.
2) Take the integer part of A as B.
3) Calculate (A-B) × 16, giving value C.
4) Take the 2nd digit as B and the 1st digit as C. (BC)h

(example) For decimal number 189:

1) 189 ÷ 16 = 11.8125 ………………………………(A)
↑
2) (B)
3) (11.8125 - 11) × 16 = 13 ……………………………(C)
4) Decimal 189 is thus hexadecimal BDh.

If the value is in range (2):

1) Divide the decimal number by 256 ÷ 16, giving value A.
2) Take the integer part of A as B.
3) Calculate (A-B) x 256 ÷ 16, giving value C.
4) Take the integer part of C as D.
5) Calculate (C-D) x 16, giving value E.
6) Take the 3rd digit as B, the 2nd digit as D, and the 1st digit as E. (BDE)h

(example) For decimal number 2100:

1) 2100 ÷ 256 = 8.203125 ………………………………(A)
↑
2) (B)
3) (8.203125 - 8) × 256 ÷ 16= 3.25 …………………(C)
↑
4) (D)
5) (3.25 - 3) × 16 = 4 ………………………………(E)
6) Decimal 2100 is thus hexadecimal 834h.

If the value is in range (3):

1) Divide the decimal number by 4096, giving value A.
2) Take the integer part of A as B.
3) Calculate (A-B) × 4096 ÷ 256, giving value C.
4) Take the integer part of C as D.
5) Calculate (C-D) × 256 ÷ 16, giving value E.
6) Take the integer part of E as F.
7) Calculate (E-F) × 16, giving value G. (Round to the nearest whole number.)
8) Take the 4th digit as B, the 3rd digit as D, the 2nd digit as F, and the 1st digit as G. (BDFG) h

(example) For decimal number 31814:

1) 31814 ÷ 4096 = 7.7670898 ……………………………(A)
↑
2) (B)
3) (7.7670898 - 7) × 4096 ÷ 256 = 12.273436 ……(C)
↑
4) (D)
5) (12.273436 - 12) × 256 ÷ 16 = 4.374976 ………(E)
↑
6) (F)
7) (4.374976 - 4) × 16 = 5.999616
(Round to the nearest whole number.)
↓
8) 6 …………………(G)
9) Decimal 31814 is thus hexadecimal 7C46h.

[How to Convert Hexadecimal Numbers to Decimal Numbers]

For hexadecimal number (ABCD)h, calculate its equivalent decimal number as follows.

(A × 4096) + (B × 256) + (C × 16) + (D × 1)
= decimal number

(example) For hexadecimal number (3BA4)h:

(3 × 4096) + (11 × 256) + (10 × 16) + (4 × 1) = 15268

☞ : changed portion

9. HALL adjustment

< Page 7-20 >

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
Add ☞ 1	6	00	01	After data setting is complete, press the PAUSE button. (preparation)	
Add ☞ 2	1	00	01	After data setting is complete, press the PAUSE button.	
Add ☞ 3	D	21	21	After data setting is complete, press the PAUSE button.	
4	6	02	03	After data setting is complete, press the PAUSE button.	

5

⋮

< Page 7-21 >

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	02	00	After data setting is complete, press the PAUSE button.	
2	6	01	00	After data setting is complete, press the PAUSE button.	
Add ☞ 3	D	21	00	After data setting is complete, press the PAUSE button.	
Add ☞ 4	1	00	00	After data setting is complete, press the PAUSE button.	
Add ☞ 5	6	00	00	After data setting is complete, press the PAUSE button. (End)	

< Page 7-22 >

10. Flange back adjustment

Purpose: Automatic flange back adjustment of inner focus lens

Adjustment error: Loss of focus when switched between auto focus and manual focus.

Subject	Chart for flange back adjustment (Placed 2000 ± 5 mm in front of the lens Illuminance: 300 ± 50 lux.)
Measurement Point	Check the operations on the TV monitor.
Measuring Instrument	
Adjustment Page	F
Adjustment Address	98 99 9A 9B 9C 9D

Note: Confirm that the "STEADY SHOT" switch and the "FOCUS" swich are turned OFF.

Add ☞

< Page 7-23 >

The procedure of this adjustment has been changed. Replace the old pages with these new pages.

11. Flange back check

Subject	Siemens star (Placed 2m in front of the lens)
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Specified Value	$D_2 = D_1 \pm 3$

Checking method:

Order	Page	Address	Data	Procedure	Conditions
1	6	00	01	After data setting is complete, press the PAUSE button. (preparation)	
2	1	00	01	After data setting is complete, press the PAUSE button.	
3	D	21	21	After data setting is complete, press the PAUSE button.	
4				Place the Simens star 2m in front of the lens.	
5				To open the IRIS, decrease the luminous intensity to the simens star up to a point before noise appears on the image displayed on the monitor TV screen.	
6				Expose the Simens star at the TELE end.	
7				Press the "Focus" button, and turn on the auto focus.	
8	6	02	0C	Check that the DDS display is 00 0009. (Focusing check)	Auto focus on
9				Press the "Focus" button and turn off the auto focus.	
10				Expose the simens star at the WIDE end.	
11	6	02	00		
12	F	02	B8	After data setting is complete, press the PAUSE button.	
13				Read the DDS display data (4 digits) and take it as D_1. (example) DDS display · · · 63 4500 D_1=6345	Zoom WIDE end Auto focus off
14				Press the "Focus" button, and turn on the auto focus.	
15	6	02	0C	Check that the DDS display is 00 0009. (Focusing check)	Auto focus on
16	6	02	00	Read the DDS display (focus position display) data and take it as D_2. (example) DDS display · · · 63 5B00 D_2=635B	Zoom WIDE end Auto focus on Focusing condition
17				Check that $D_2 = D_1 \pm 3$.	

Checking method:

Order	Page	Address	Data	Procedure
1	F	02	00	After data setting is complete, press the PAUSE button.
2	D	21	00	After data setting is complete, press the PAUSE button.
3	1	00	00	After data setting is complete, press the PAUSE button.
4	6	00	00	After data setting is complete, press the PAUSE button. (End)

☛ : changed portion

< Page 7-24 >

12. SYNC level check (VC-132 board)

Subject	Not required
Measurement Point	Check land☛ (CAM Y)
Measuring Instrument	Oscilloscope
Specified Value	A=150 ± 10mV

< Page 7-25 >

13. Burst level check (VC-132 board)

Subject	Not required
Measurement Point	Check land☛ (CAM C)
Measuring Instrument	Oscilloscope
Specified Value	A=150 ± 15mVp-p

< Page 7-27 >

15. IRIS IN/OUT adjustment

Checking method:

Order	Page	Address	Data	Procedure	Conditions
Add ☛1	6	00	01	After data setting is complete, press the PAUSE button. (preparation)	
Add ☛2	1	00	01	After data setting is complete, press the PAUSE button.	
Add ☛3	D	21	21	After data setting is complete, press the PAUSE button.	
4	6	02	0E	After data setting is complete, press the PAUSE button. (It displays the LIGHIT LEVEL on the page A.)	
5 :					

Processing after Adjustments:

Order	Page	Address	Data	Procedure	Conditions
1	6	02	00	After data setting is complete, press the PAUSE button.	
2	6	01	00	After data setting is complete, press the PAUSE button.	
Add ☛3	D	21	00	After data setting is complete, press the PAUSE button.	
Add ☛4	1	00	00	After data setting is complete, press the PAUSE button.	
Add ☛5	6	00	00	After data setting is complete, press the PAUSE button. (End)	

< Page 7-28 >

16. Max gain adjustment (VC-132 board)

Purpose: Variation of the minimum illumination among units is removed.

Adjustment error: No picture at low illumination (dark)

☛ Add

Note: Confirm that the "STEADY SHOT" switch is turned OFF.

Subject	White pattern standard picture frame
Measurement Point	Check land☛ (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	74
Specified Value	A=260 ± 10mV or AC to B4

Adjusting method:

Order	Page	Address	Data	Procedure	Conditions
Add ☛1				Place an ND filter 2.0 (1.0 + 1.0) on the lens.	
2	6	00	01	After data setting is complete, press the PAUSE button. (Preparation)	
3	6	01	19	After data setting is complete, press the PAUSE button.	

☞ : changed portion

< Page 7-33 >

☞ Delete

21. Pan tilt detect adjustment

Subject	
Measurement Point Measuring Instrument	DDS display of EVF or TV monitor
Adjust Page	F
Adjust Address	E4 E7
Specified Value	

Adjusting methed:

Order	Page	Address	Data	Procedure	Conditions
1	6	00	01	Releasing of protect.	
2	6	02	OF	Set the PITCH DATA display made. Read the DDS display data and take it as PD.	
3	6	02	10	Set the YAN DATA display made. Read the DDS display data and take it as YD.	
4				Calculate PT and YT using the following equations. $PT=20H+\lvert 79H-PDH\rvert$ $YT=1EH+\lvert 79H-YDH\rvert$	
5	F	E4		Set the data to PT.	
6	F	E7		Set the data to YT.	

21. Deleting the "PAN TILT Detection Adjustment"

- If SE001 or SE002 on the YP-13 board is replaced, execute the following adjustment in addition to the Anti-Shake Correction adjustment. PAN TILT Detection Adjustment is then no longer necessary.

Adjustment Procedure

Sequence	Page	Address	Data	Adjustment Procedure	Conditions
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)	
2	F	E4	25	After setting the data, press the PAUSE button.	
3	F	E7	25	After setting the data, press the PAUSE button.	
4	6	00	00	After setting the data, press the PAUSE button. (Adjustment ends.)	

<Page 7-33>

The procedure of this adjustment has been changed. Replace the old pages with these new pages.

22. Steady shot function Adjustment

- The anti-shake correction adjustment is necessary only when the angular velocity sensor is replaced. If the microprocessors or circuit are replaced because they are broken, this adjustment is not necessary. Check the operation of anti-shake correction only.

- When a new angular velocity sensor arrives, note the sensitivity table which is supplied with it. Note also to which side of the circuit board the new angular velocity sensor is attached. If it is attached to the wrong side, the picture will shake horizontally or vertically when the anti-shake correction operates.

Objects	Chart A, and chart B
Measurement Point	VIDEO OUT connector
Measuring Equipment	Oscilloscope
Adjustment Page	F
Adjustment Address	D0 D1

Object used during measurement

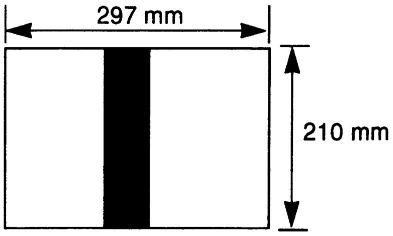


Fig. A

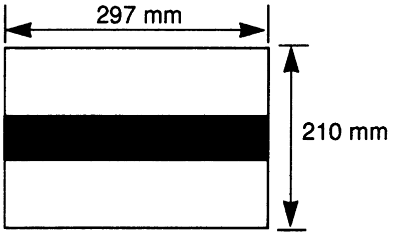


Fig. B

Either paste a black tape on an A4 sheet of while paper, or mark a black band with a black pen.
(Make a sharp contrast between black and white.)

Note: Set the "Anti-Shake Correction" to ON.

Adjustment Procedure

Sequence	Page	Address	Data	Adjustment Procedure	Conditions
1				Move the zoom to the TELE end. Connect the remote controller to the LANC connector.	
2				Shoot the object as shown in Fig. A. Set the picture position and size so that the black line is positioned in the center of the monitor screen.	
3	6	00	01	After setting the data, press the PAUSE button. (Preparation)	
4	F	DF		Change data from 08 to 07. Press the PAUSE button and check to see that the optical prism moves and the camera picture also moves.	
5				Now measure how many micro-seconds the black video line has moved horizontally on the monitor. Take the movement distance as "t1". Use the value shown in the sensor sensitivity display which is written on the SE002 of the YP-13 board, and the value of the above movement distance "t1" to calculate as follows: $\text{Horizontal} = \frac{3.4}{\text{Movement distance t1 } (\mu\text{sec})} \times \frac{2.265}{\text{Sensor sensitivity}} \times 152$	

Continued on next page

Sequence	Page	Address	Data	Adjustment Procedure	Conditions
6	F	D1		Convert the horizontal value which is obtained in step 5 to its hexadecimal value. Set the result of the calculation, then press the PAUSE button. (For details of how to convert from a decimal value to a hexadecimal value, refer to page 7 of this supplement.)	
7	F	DF		Change data from 07 to 08. Press the PAUSE button.	
8				Shoot the subject shown in Fig.B. Adjust the camera position so that the block subject is located in the center of screen.	
9	F	DD		Change data from 08 to 07. Press the PAUSE button and check to see that the optical prism moves and the camera picture also moves.	
10				Use the value shown in the sensor sensitivity display which is written on the SE001 of the YP-13 board and the value of the above movement distance "t2" to calculate as follows: $\text{Vertical} = \frac{1.35}{\text{Movement distance t2 (msec)}} \times \frac{2.269}{\text{Sensor sensitivity}} \times 151$	
11	F	D0		Convert the vertical value which is obtained in step 10 to its hexadecimal value. Set the result, then press the PAUSE button. (For details of how to convert from a decimal value to a hexadecimal value, refer to page 7 of this supplement.)	
12	F	DD		Change data from 07 to 08. Press the PAUSE button.	
13	6	00	00	After setting data, press the PAUSE button. (Adjustment ends.)	
14				Confirm that the anti-shake correction operation works properly.	

: changed portion

< Page 7-35 >

1. Current consumption adjustment (VF-69P board)

Mode	Stop
Signal	Color bar signal whose chroma signal and burst signal are turned off.
Measurement Point	Remove L953 and measure +: Pin ① of CN951 –: ⊕ pin of C958
Measuring Instrument	Ammeter
Adjustment Element	RV951
Specified Value	72 ± 5 mA (AEP, UK) 85 ± 3mA (EXCEPT AEP, UK)

Adjusting method:

1. Check that the voltage of Pin ① of CN951 is 6.0 ± 0.1 Vdc.
2. Adjust the current consumption to 72 ± 5mA (AEP, UK), 85 ± 3mA (EXCEPT AEP, UK) with RV951.

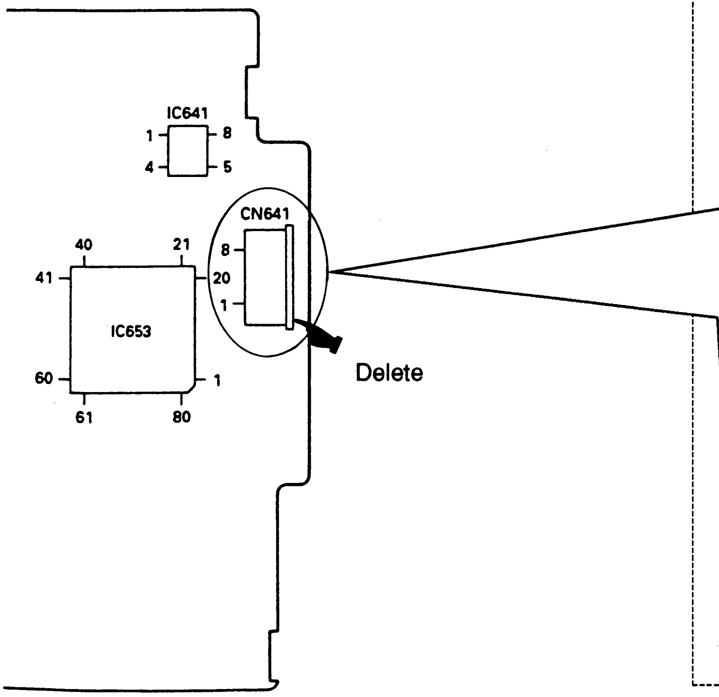
< Page 7-43 >

VC-132 BOARD
(CONDUCTOR SIDE)

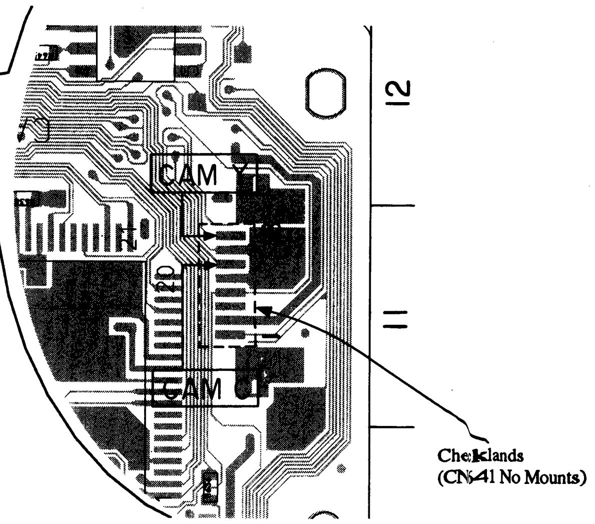
Add

Camera Output Signal Measuring point

(Checklands (CAM Y, CAM C) for measuring the camera output signals are incorporated, connect the oscilloscope and perform the adjustments.)



Delete



Checklands
(CN641 No Mounts)

English
95A1688-1
Printed in Japan
© 1995.1
Published by Personal A&V Products Div.
Quality Engineering Dept.

Sony Corporation
Consumer A&V Products Company
Personal A&V Products Div.

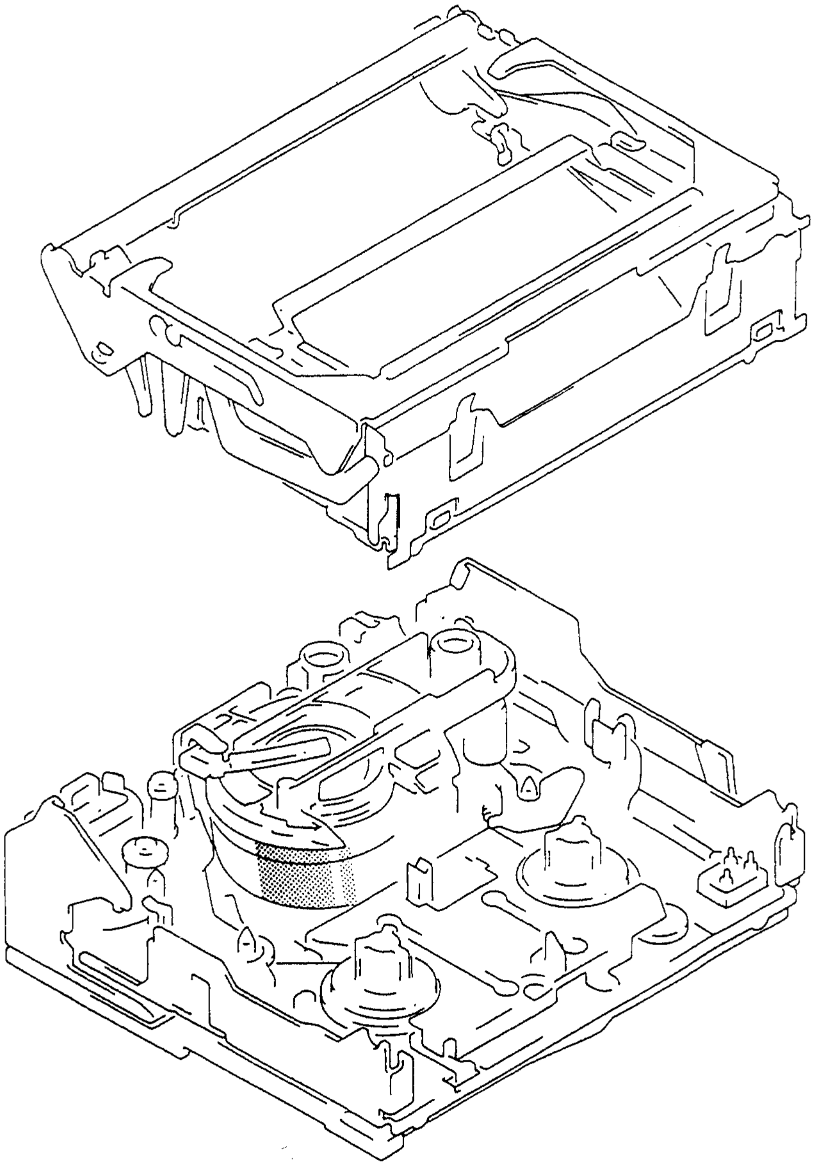
8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

TABLE OF CONTENTS

Section Title Page

1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

1-1. Cassette compartment Assembly ---------- 3
1-2. Operation with Cassette compartment Assembly Removed ---------- 5
1-3. Handling of Mode Selector ---------- 6
1-4. Mode Selector Schematic Diagram ---------- 7
1-5. Mode Selector Parts List ---------- 7

2. PERIODIC CHECK AND MAINTENANCE

2-1. Cleaning of Rotaly Drum Assembly ---------- 8
2-2. Cleaning of Tape Path ---------- 8
2-3. Periodic Check Items ---------- 9
2-4. Service Jigs List ---------- 10

3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

3-1. Retainer, Gooseneck Assembly ---------- 12
3-2. Protector Base Assembly ---------- 13
3-3. Drum Assembly ---------- 14
3-4. Capstan Motor Assembly ---------- 15
3-5. Take-UP Reel Assembly and T-Soft Assembly ---------- 16
3-6. Pinch Arm Assembly ---------- 17
3-7. LS Chassis Assembly ---------- 18
3-8. Guide Base T Assembly and Guide Base S Assembly ---------- 20
3-9. Guide Arm T Assembly and Guide Arm S Assembly ---------- 22
3-10. Supply Reel Table Assembly and TG-1 Arm Assembly ---------- 23
3-11. TG-2 Roller Assembly ---------- 24
3-12. TG-7 Arm Assembly ---------- 25
3-13. LM Motor Assembly ---------- 26
3-14. LS Arm ---------- 27
3-15. M Slider Assembly ---------- 28
3-16. Pinch Press Arm Assembly ---------- 29
3-17. Cam ---------- 30
3-18. GL Arm Assembly ---------- 31
3-19. L Gear A and L Gear B ---------- 32
3-20. Relay Pulley and Change Gear Assembly ---------- 33
3-21. Rotary Upper Drum Replacement ---------- 34
3-22. Adjustment of Tension Regulator Position ---------- 35
3-23. FWD Back Tension Adjustment ---------- 35
3-24. Reel Torque Check ---------- 35

4. TAPE PATH ADJUSTMENT

4-1. Preparation for Adjustment ---------- 37
4-2. Tracking Adjustment ---------- 38
4-3. No.2 Guide (TG-2) Adjustment ---------- 38
4-3-1. No.2 Guide (TG-2) Height Presetting ---------- 38
4-3-2. No.2 Guide (TG-2) Adjustment ---------- 39
4-4. No.7 Guide (TG-7) Adjustment ---------- 39
4-5. CUE and REW Waveform Check ---------- 39
4-6. Check After Adjustment ---------- 40
4-6-1. Tracking Check ---------- 40
4-6-2. Rising Check ---------- 40
4-6-3. Tape Path Check ---------- 40

1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the [USE] mode. (To select the [USE] mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the [USE] mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow Ⓐ to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow Ⓑ.
4) With the cassette compartment assembly ❺ pushed in arrow Ⓒ direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow Ⓓ to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow Ⓒ until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow Ⓓ to remove the cassette compartment assembly.

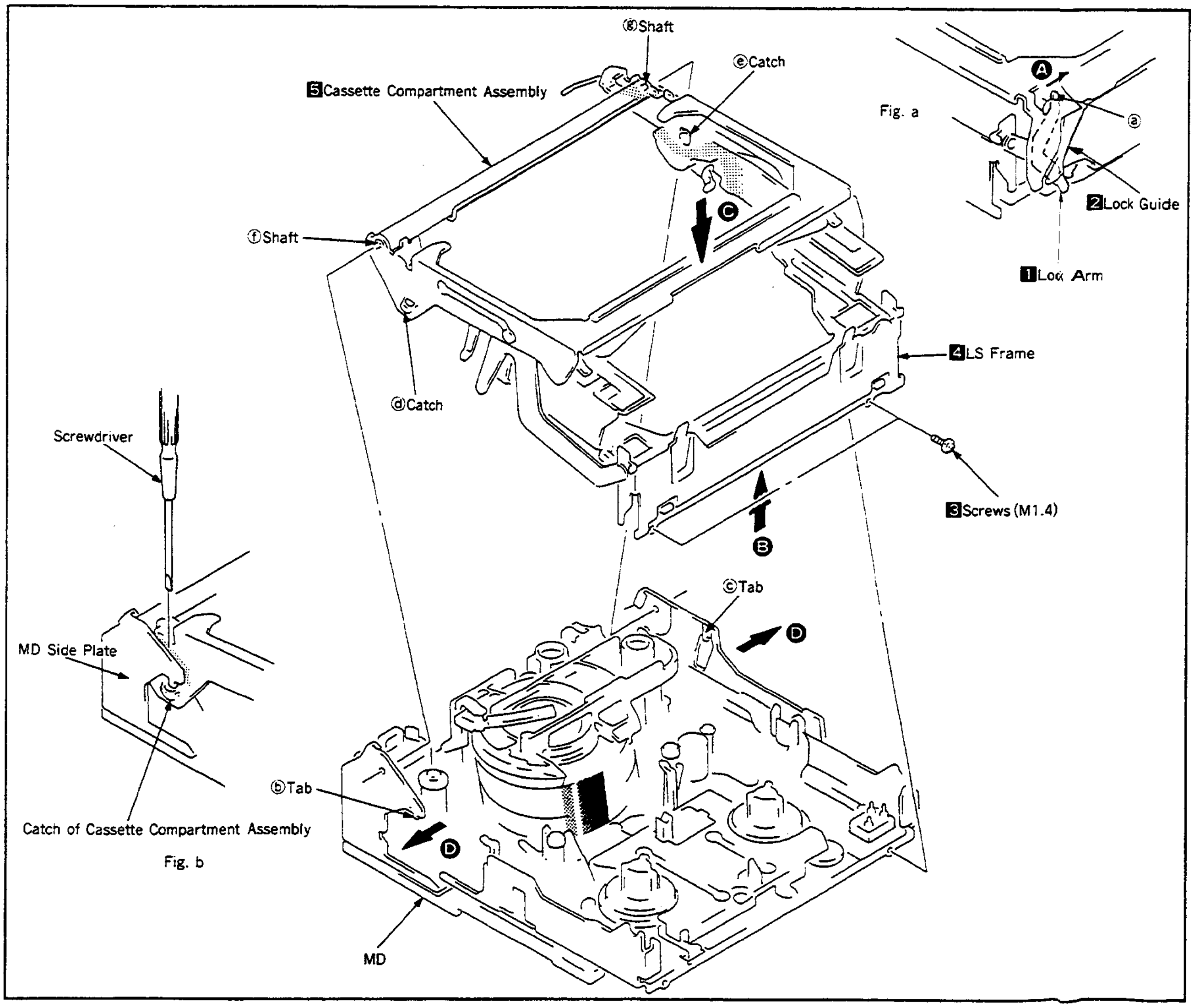

ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
Fig. a
Ⓐ
ⓐ
❷Lock Guide
❶Lock Arm
Ⓒ
ⓕShaft
❹LS Frame
ⓓCatch
Screwdriver
❸Screws (M1.4)
Ⓑ
ⓒTab
Ⓓ
MD Side Plate
ⓑTab
Catch of Cassette Compartment Assembly
Fig. b
Ⓓ
MD

Fig. 1

2. Mounting (Fig. 2)

1) Select the USE mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

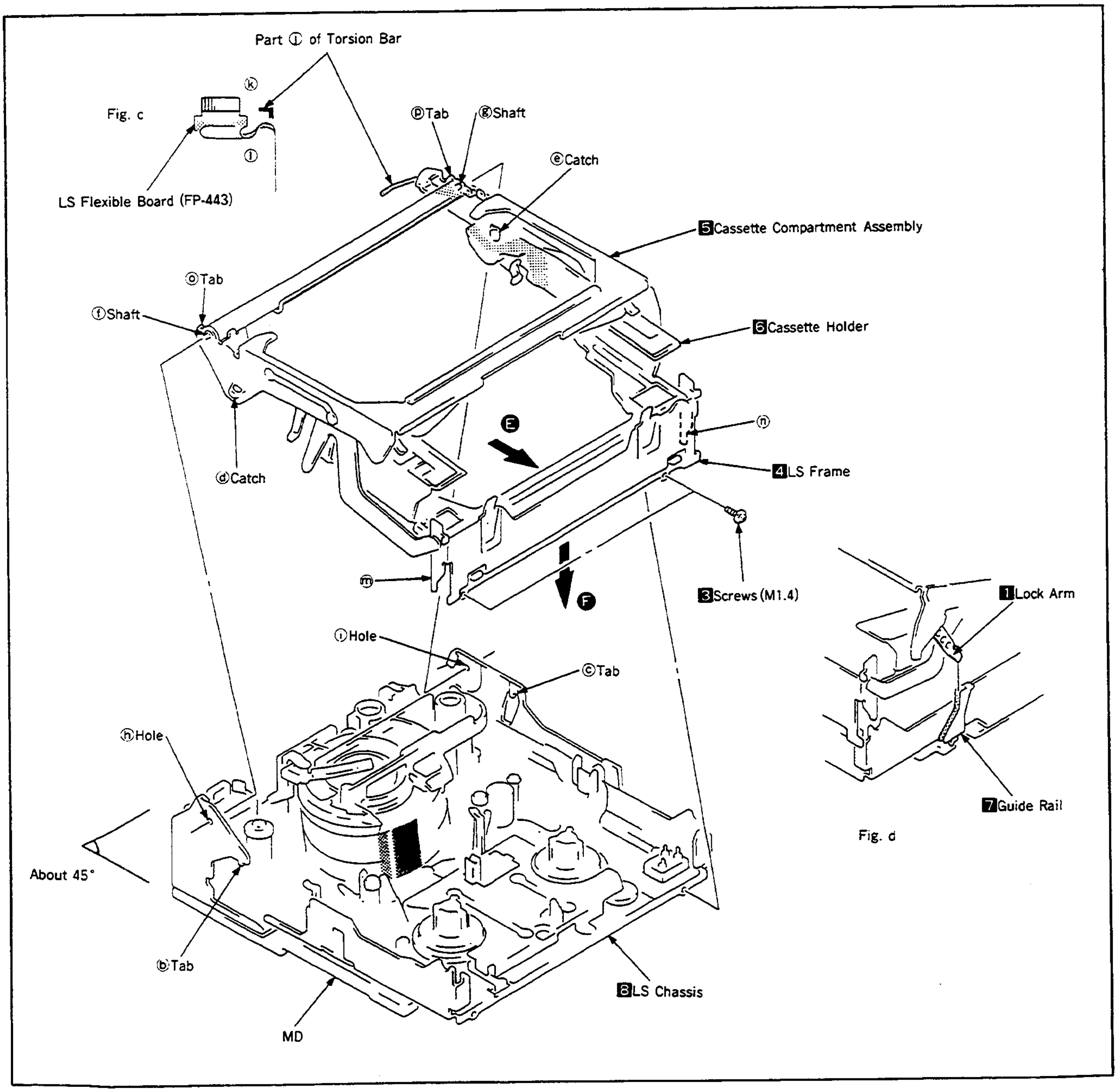

Part ⓙ of Torsion Bar
Fig. c
ⓚ
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
🅔
ⓝ
ⓓCatch
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
❼Guide Rail
Fig. d
About 45°
ⓑTab
❽LS Chassis
MD

Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap 2 on the Reflector C 1.
3) Press the pin of the push switch 3 (ON state) and fix it with adhesive tape 4 in that state.

Note : Press the asterisked (✱) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch 5 in an arrow direction as shown in Fig. a.

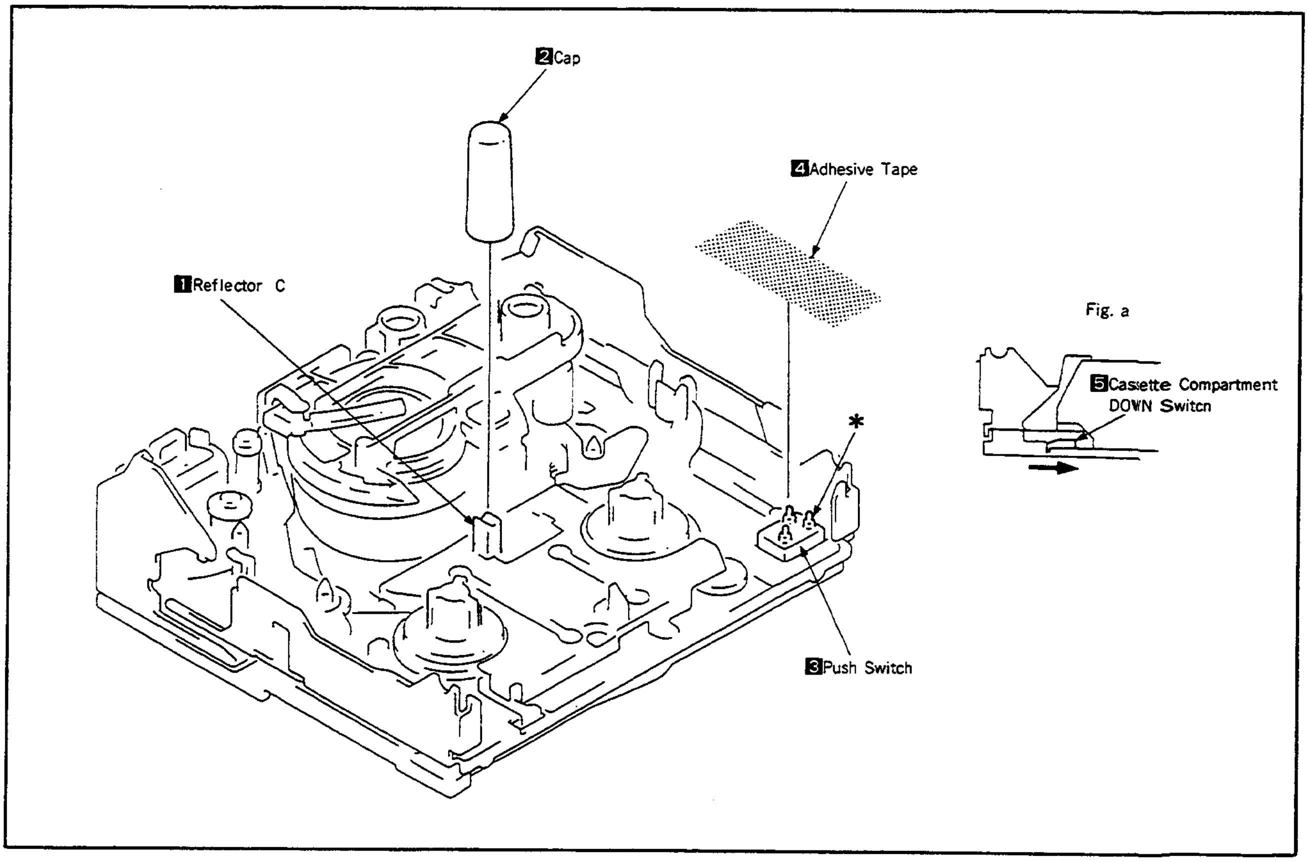

2 Cap
4 Adhesive Tape
1 Reflector C
Fig. a
5 Cassette Compartment DOWN Switch
*
3 Push Switch

Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

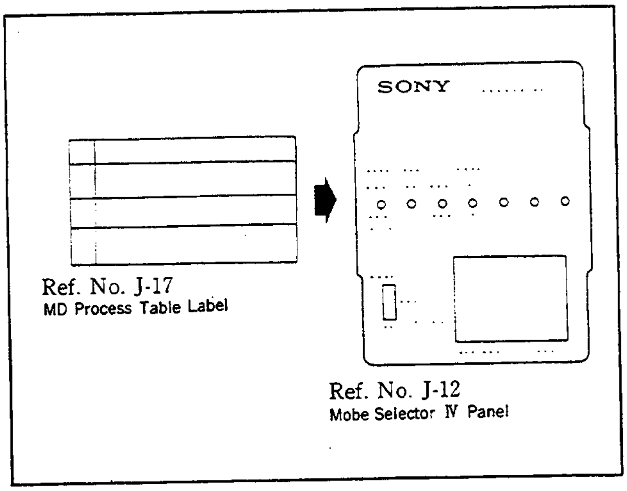

Ref. No. J-17
MD Process Table Label
SONY
Ref. No. J-12
Mobe Selector IV Panel

Fig. 4

1 Construction (Fig.5)

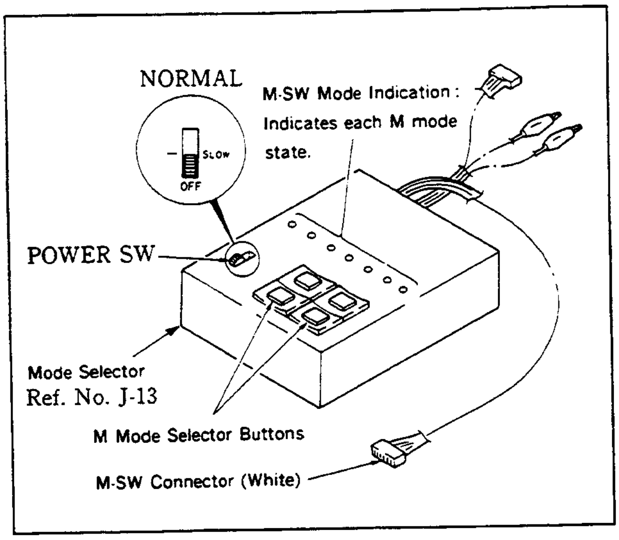

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector **1** and M-SW connector **2** into the mode selector IV conversion connector **3** respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

For CCD-FX410 series

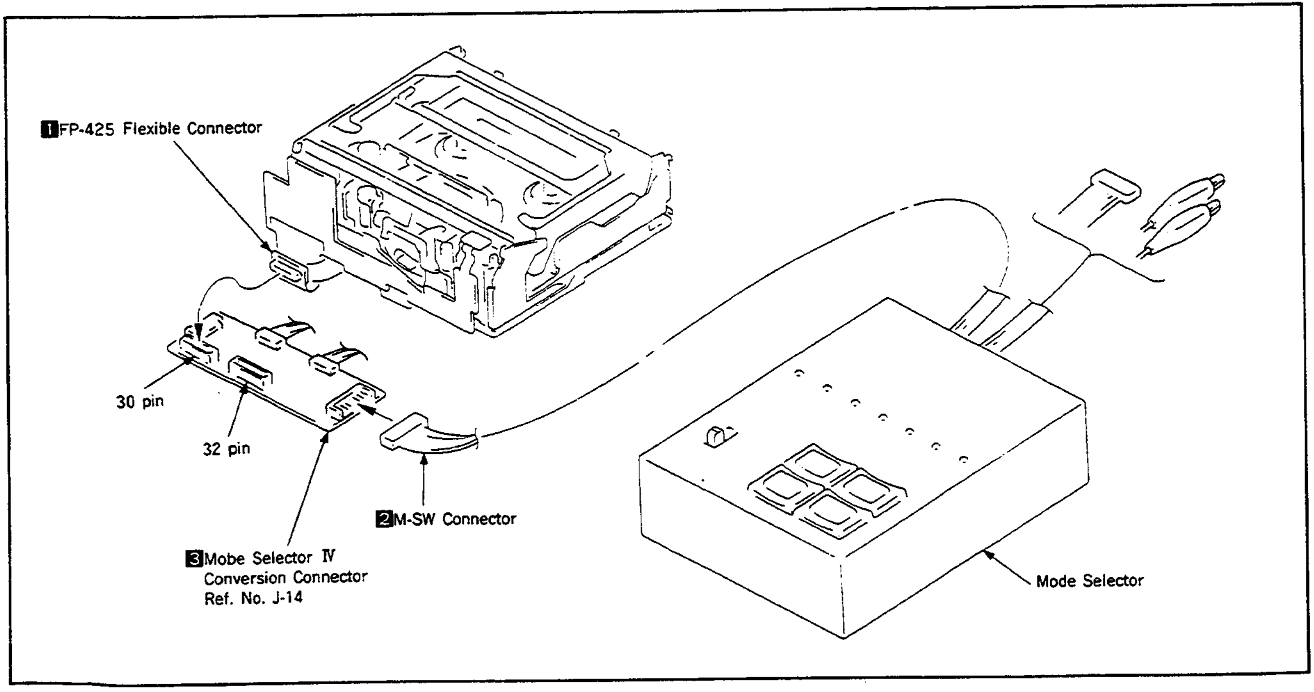
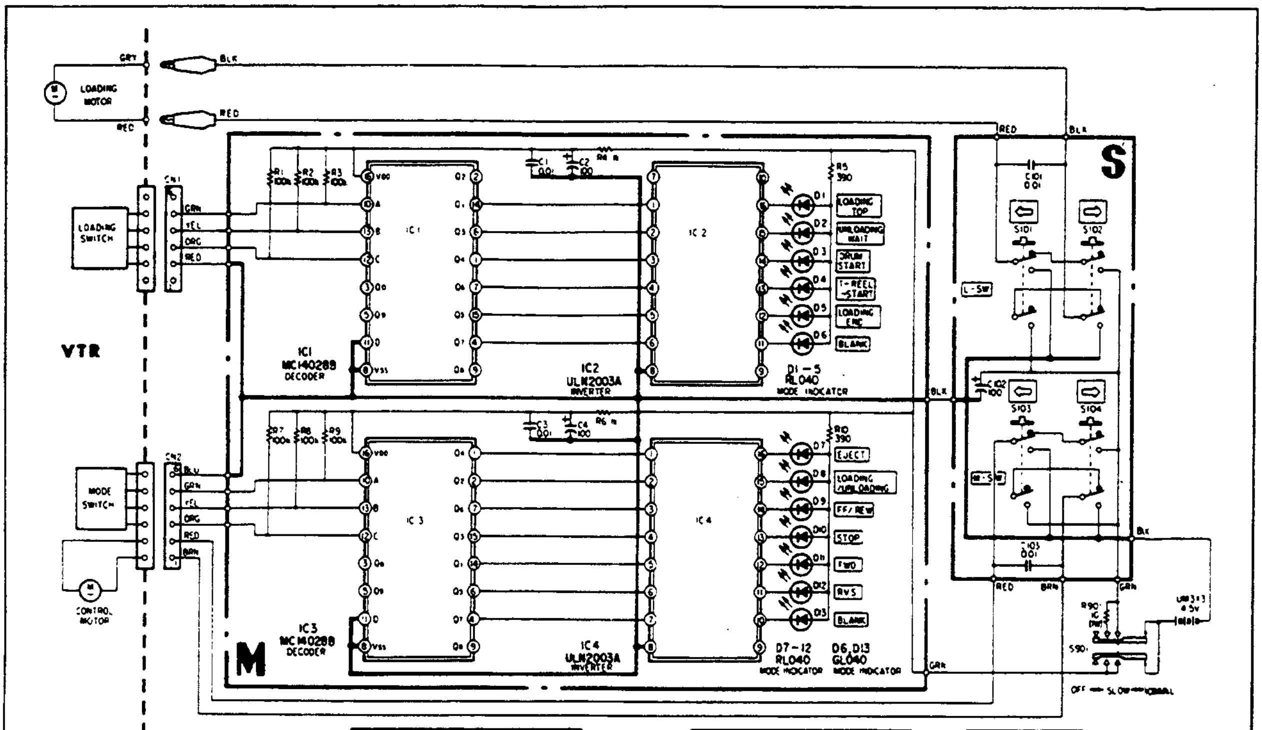

1 FP-425 Flexible Connector
30 pin
32 pin
2 M-SW Connector
3 Mobe Selector IV
Conversion Connector
Ref. No. J-14
Mode Selector

Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM


VTR
LOADING MOTOR
GRY
BLK
RED
LOADING SWITCH
CN1
GRN
YEL
ORG
RED
MODE SWITCH
CN2
BLU
BRN
CONTROL MOTOR
IC1 MC14028B DECODER
IC2 ULN2003A INVERTER
IC3 MC14028B DECODER
IC4 ULN2003A INVERTER
C1 .001
C2 100
C3 .001
C4 100
R1 100k
R2 100k
R3 100k
R4 1k
R5 390
R6 1k
R7 100k
R8 100k
R9 100k
R10 390
D1 LOADING TOP
D2 UNLOADING WAIT
D3 DRUM START
D4 T-REEL START
D5 LOADING END
D6 BLANK
D1-5 RL040 MODE INDICATOR
D7 EJECT
D8 LOADING/UNLOADING
D9 FF/REW
D10 STOP
D11 FWD
D12 RVS
D13 BLANK
D7-12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
S
M
C101 .001
C102 100
C103 .001
S101
S102
S103
S104
L-SW
M-SW
R901
S901
OFF → SLOW → NORMAL

M-SW
(IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0 : INPUT LEVEL L
1 : INPUT LEVEL H

L-SW
(IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH		DIRECTION OF MOTOR REVOLUTION
⇦	⇨	
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description		
		CAPACITOR		
C1	1-108-579-00	MILER	0.01μF	50V
C2	1-123-333-00	ELECT	100μF	24V
C3	1-108-579-00	MILER	0.01μF	50V
C4	1-123-333-00	ELECT	100μF	24V
C101	1-108-579-00	MILER	0.01μF	50V
C102	1-123-333-00	ELECT	100μF	24V
C103	1-108-579-00	MILER	0.01μF	50V
		DIODE		
D1	8-719-812-31	DIODE TLR123		
D2	8-719-812-31	DIODE TLR123		
D3	8-719-812-31	DIODE TLR123		
D4	8-719-812-31	DIODE TLR123		
D5	8-719-812-31	DIODE TLR123		
D6	8-719-812-33	DIODE TLG123A		
D7	8-719-812-31	DIODE TLR123		
D8	8-719-812-31	DIODE TLR123		
D9	8-719-812-31	DIODE TLR123		
D10	8-719-812-31	DIODE TLR123		
D11	8-719-812-31	DIODE TLR123		
D12	8-719-812-31	DIODE TLR123		
D13	8-719-812-33	DIODE TLG123A		

Ref. No	Part No.	Description		
		IC		
IC1	8-752-240-28	IC TC4028BP		
IC2	8-752-120-03	IC μPA2003C		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003C		
		RESISTOR		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

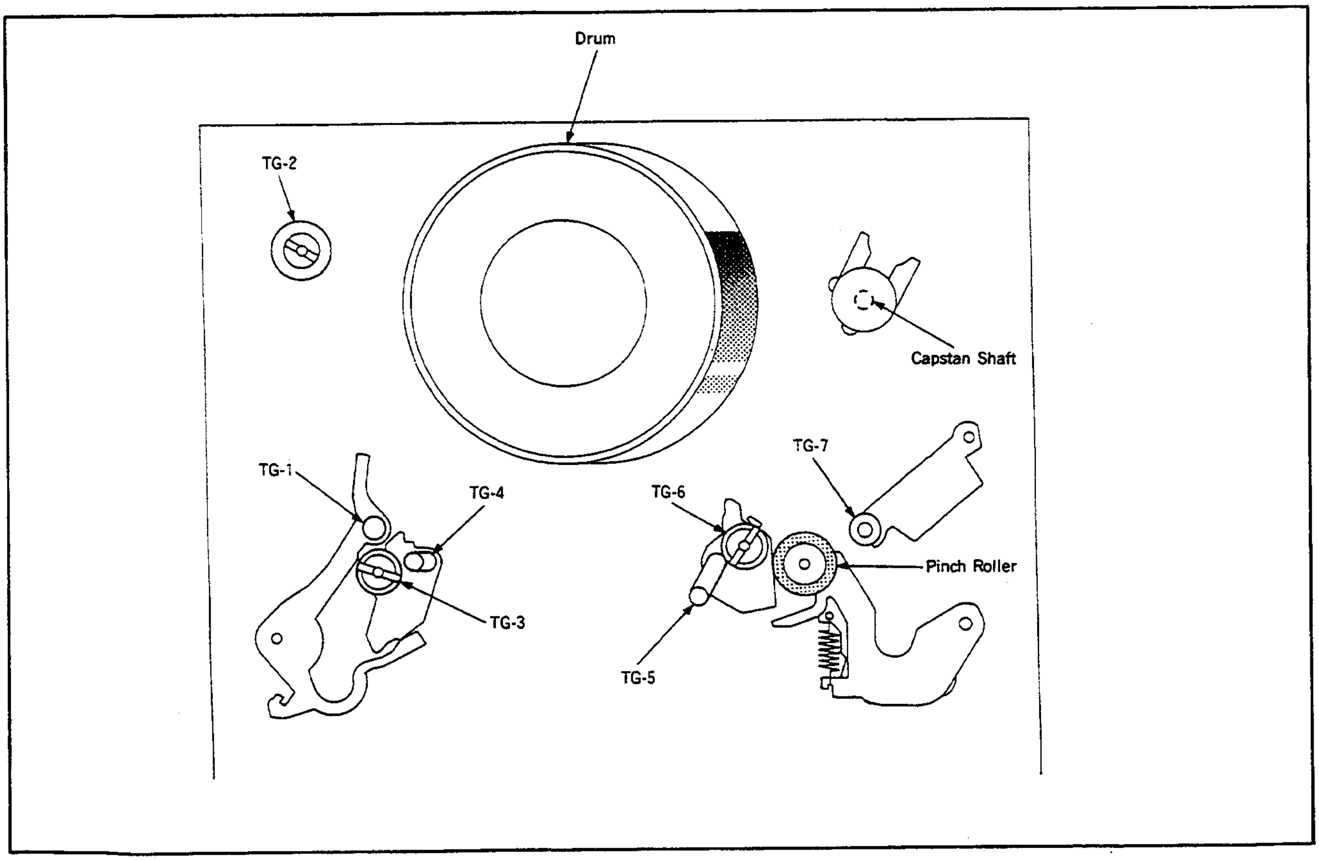


Fig. 7

2-3. PERILDIC CHECK ITEMS

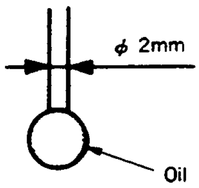
	Location of Maintenance and check	Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

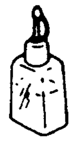


2-4. Service jigs list

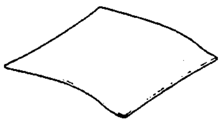
Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment
- Oscilloscope
- Analog tester (20 kΩ)

J-1



J-2



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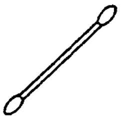

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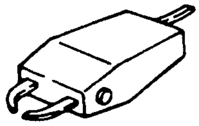

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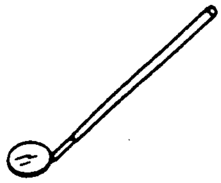
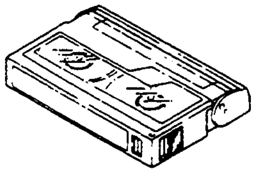
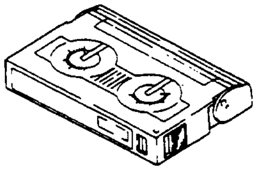


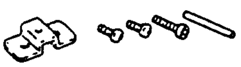
J-6



J-9

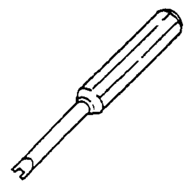


J-10

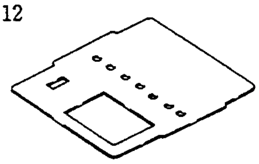


(Attached to the maintenance rotary upper drum)

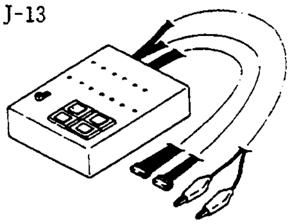
J-11



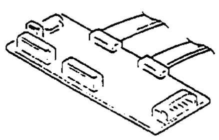
J-12



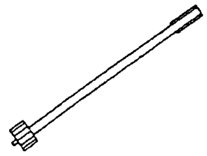
J-13



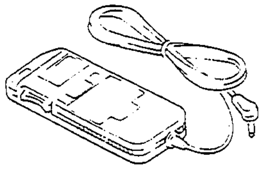
J-14



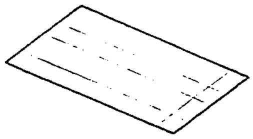
J-15



J-16



J-17



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

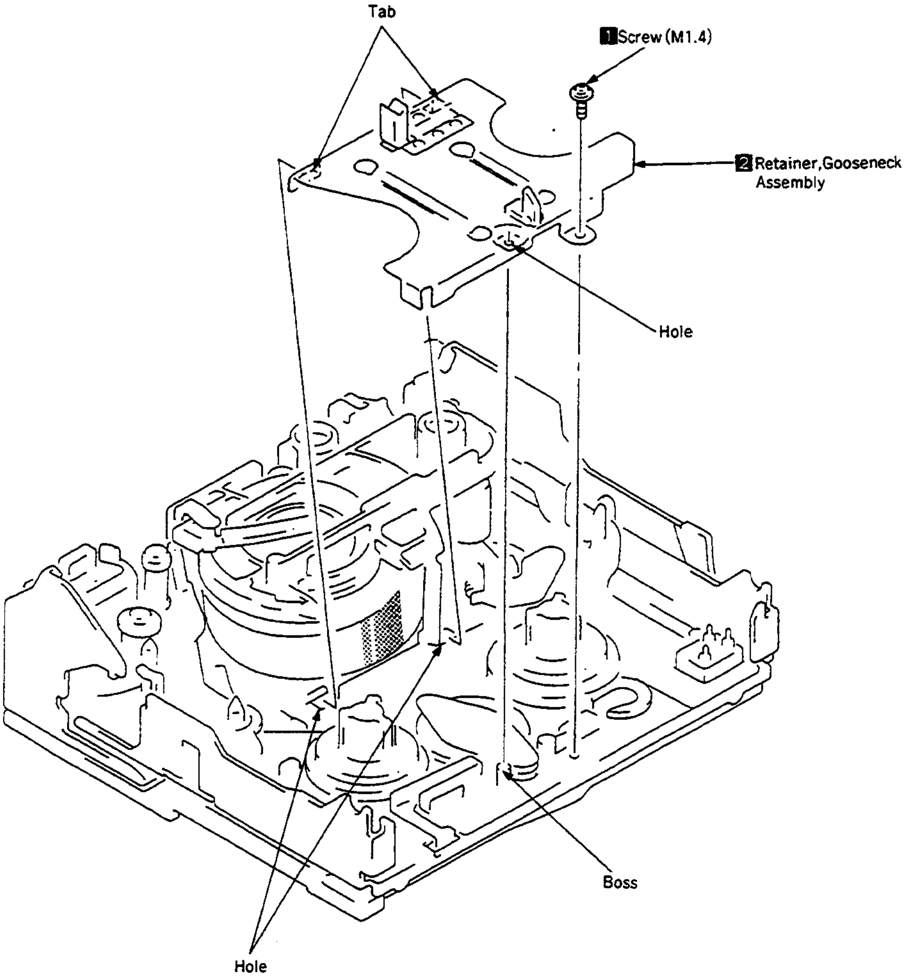


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

2. Mounting

1) Mount the protector base assembly ❷ with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

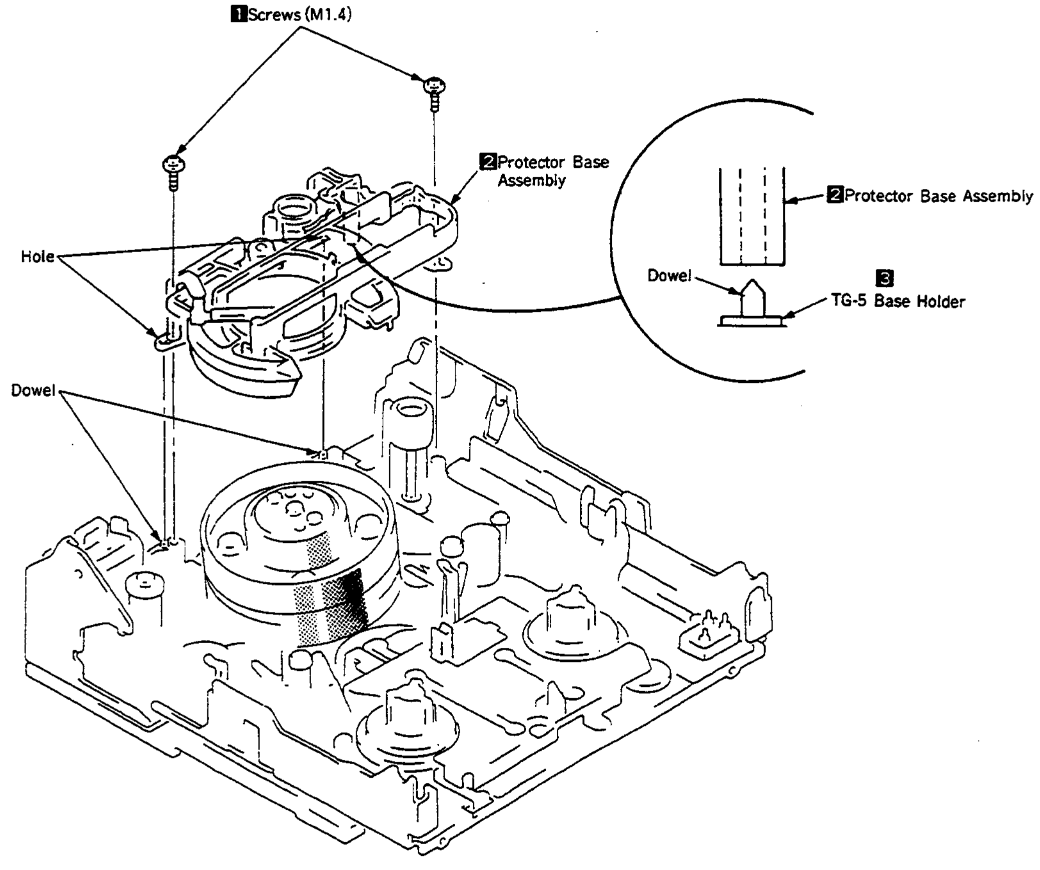

❶Screws (M1.4)
❷Protector Base Assembly
Hole
Dowel
❷Protector Base Assembly
Dowel
❸
TG-5 Base Holder

Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

Note : Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

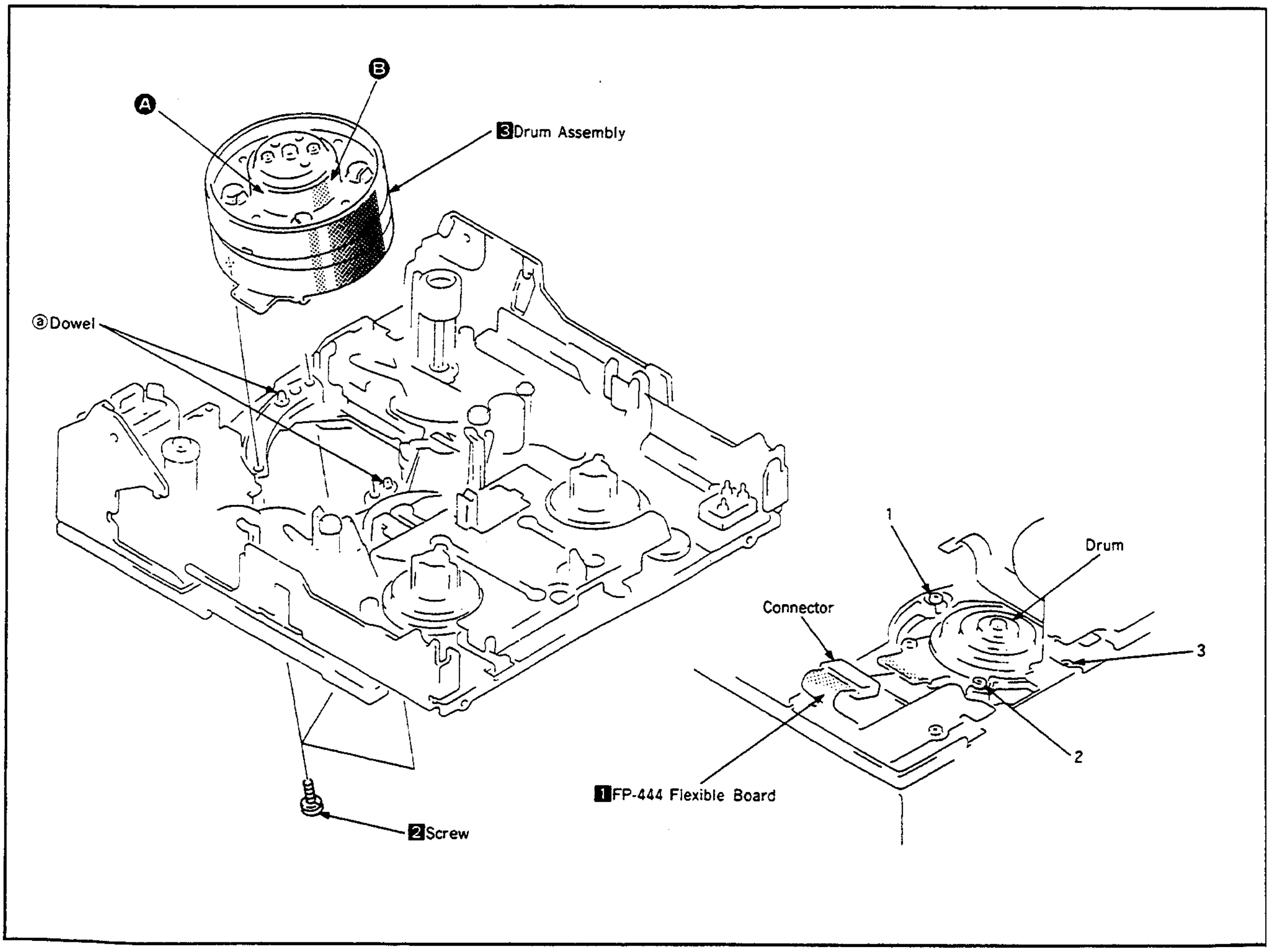


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

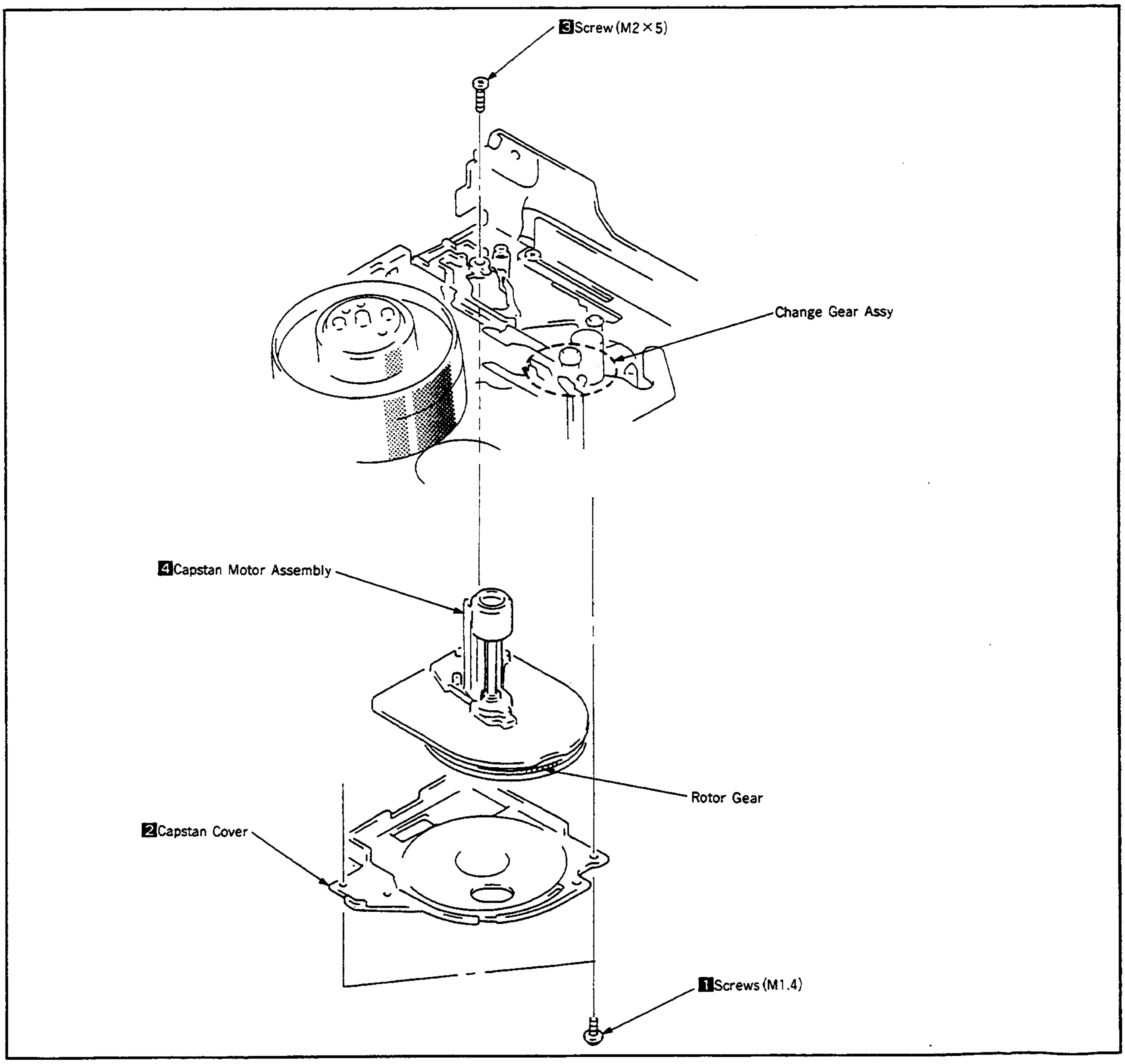

3 Screw (M2 × 5)
Change Gear Assy
4 Capstan Motor Assembly
Rotor Gear
2 Capstan Cover
1 Screws (M1.4)

Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly **1**.
4) Remove the T soft assembly **2**, then the T soft arm **3**.

2. Mounting

1) Mount the T soft arm **3** with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly **2** with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly **1** and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

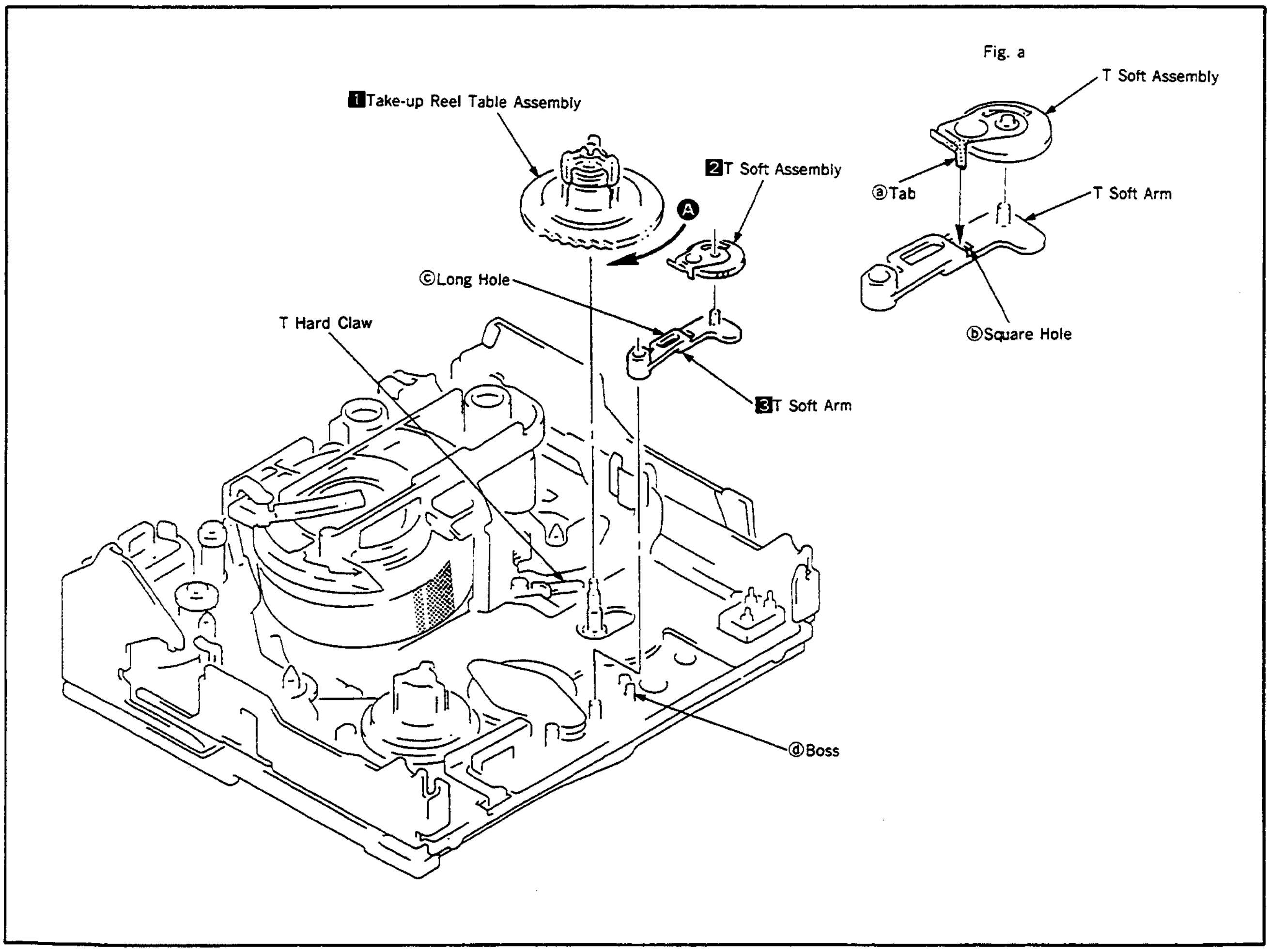


Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole
1 Take-up Reel Table Assembly
2 T Soft Assembly
Ⓐ
ⓒLong Hole
T Hard Claw
3 T Soft Arm
ⓓBoss

Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the READY mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

2. Mounting

1) Select the READY mode.
2) Hooking a spring of pinch arm assembly ❷ to the cassette positioning boss on the chassis, mount the pinch arm assembly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

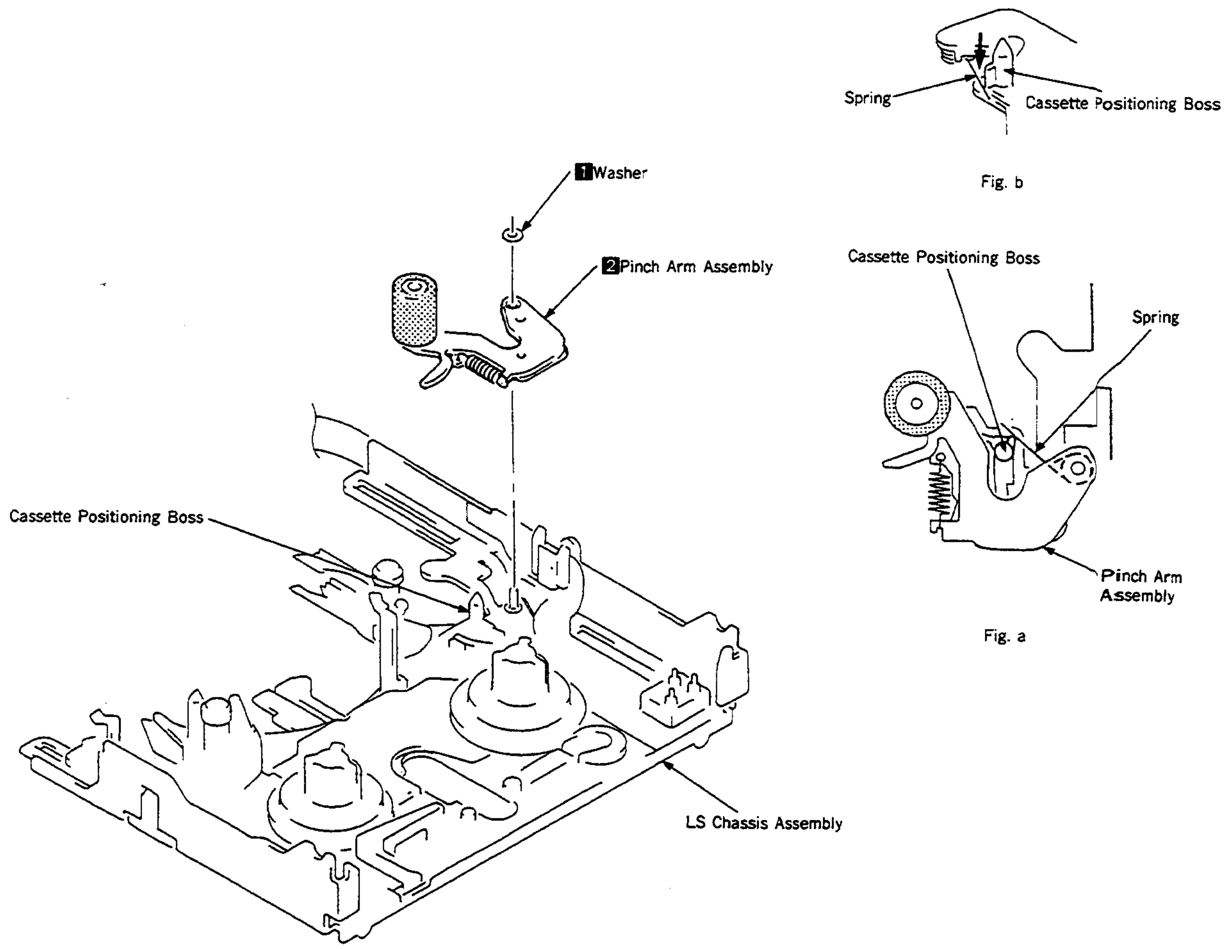

Spring
Cassette Positioning Boss
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Cassette Positioning Boss
Pinch Arm Assembly
LS Chassis Assembly

Fig. b

Fig. a

Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw ❶, TG-5 base holder ❷, and LS flexible board ❸.
5) Remove a lock washer ❹, then the gooseneck as sembly ❺.
6) Remove four screws ❻, then the LS chassis assembly ❼.

2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly ❼ on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws ❻.
6) Mount the LS flexible board ❸ and TG-5 base holder ❷,then tighten the screw ❶.
7) Mount the Gooseneck assembly ❺ and fix it with a washer ❹.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

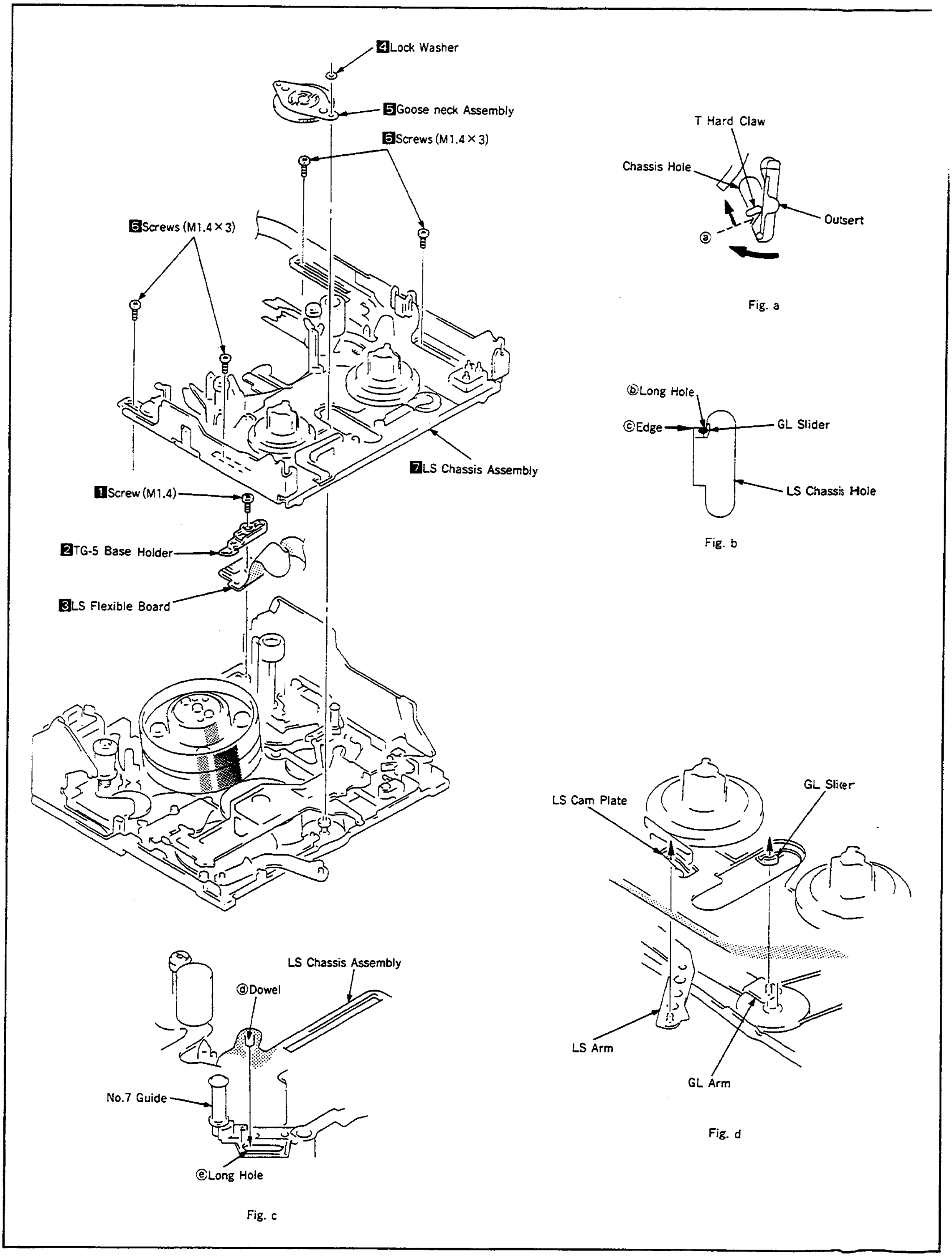

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4 × 3)
6 Screws (M1.4 × 3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑLong Hole
ⓒEdge
GL Slider
LS Chassis Hole
LS Chassis Assembly
ⓓDowel
No.7 Guide
ⓔLong Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

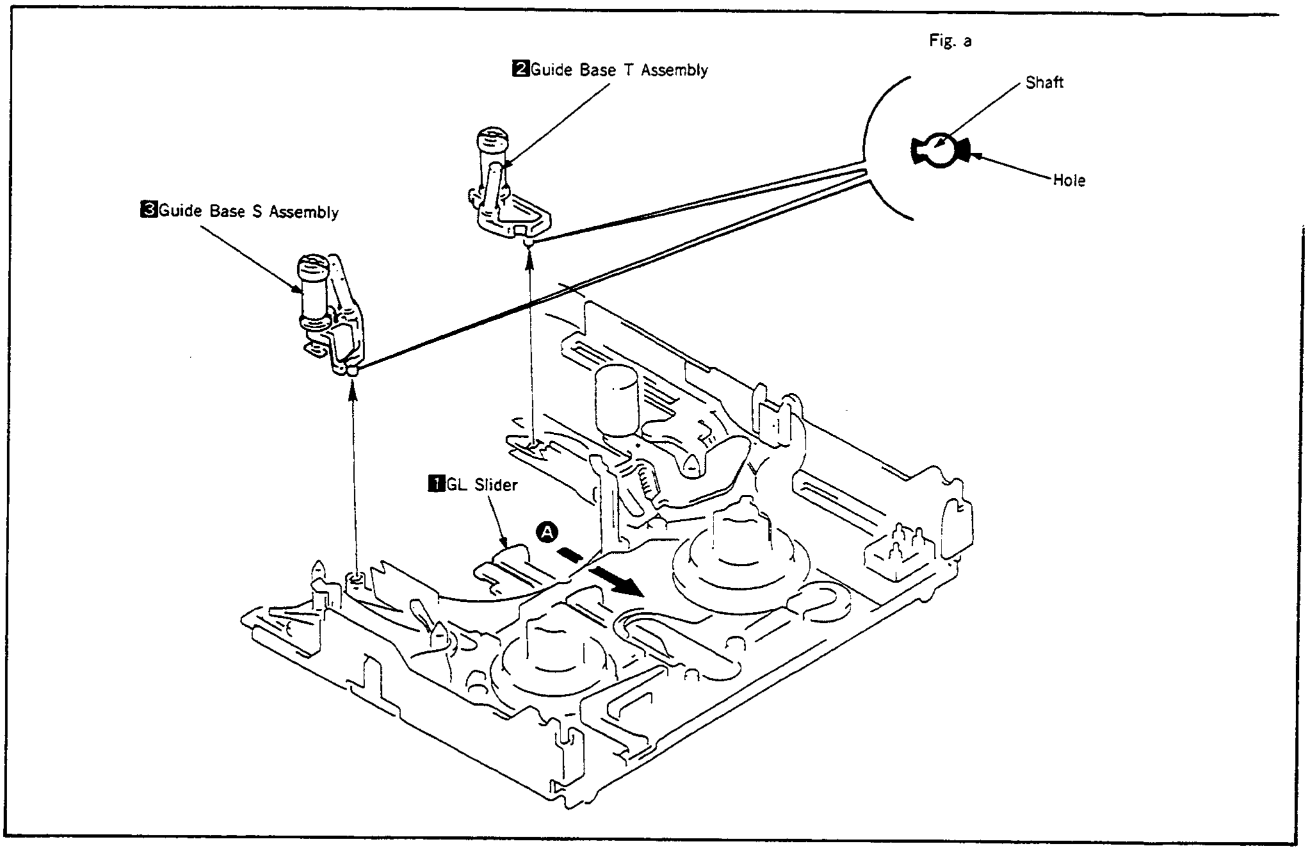


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

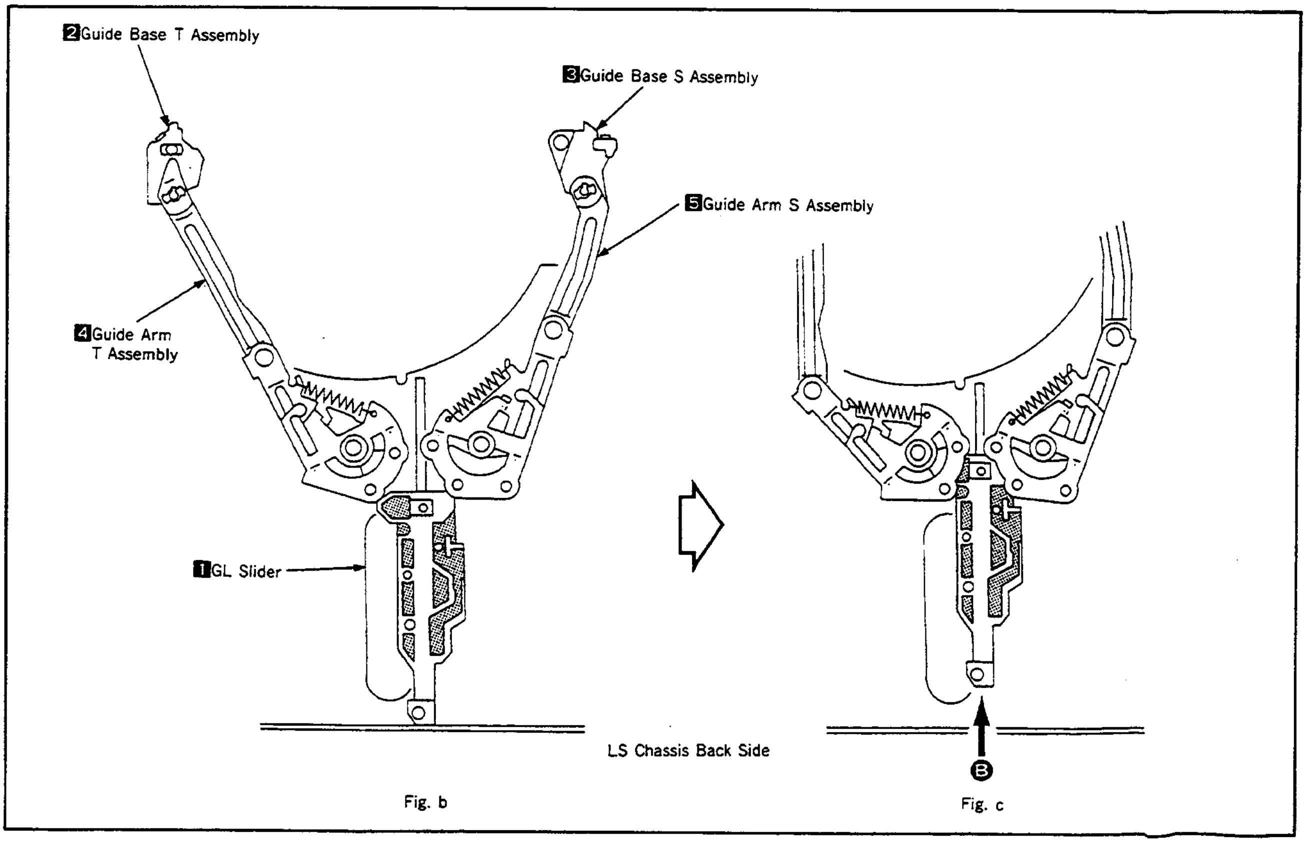

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B
Fig. b
Fig. c

Fig. 16

3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers 1, then the guide arm T assembly 2 and guide arm S assembly 3 respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly 2 and guide arm S assembly 3, then fix them with a lock washer 1 respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

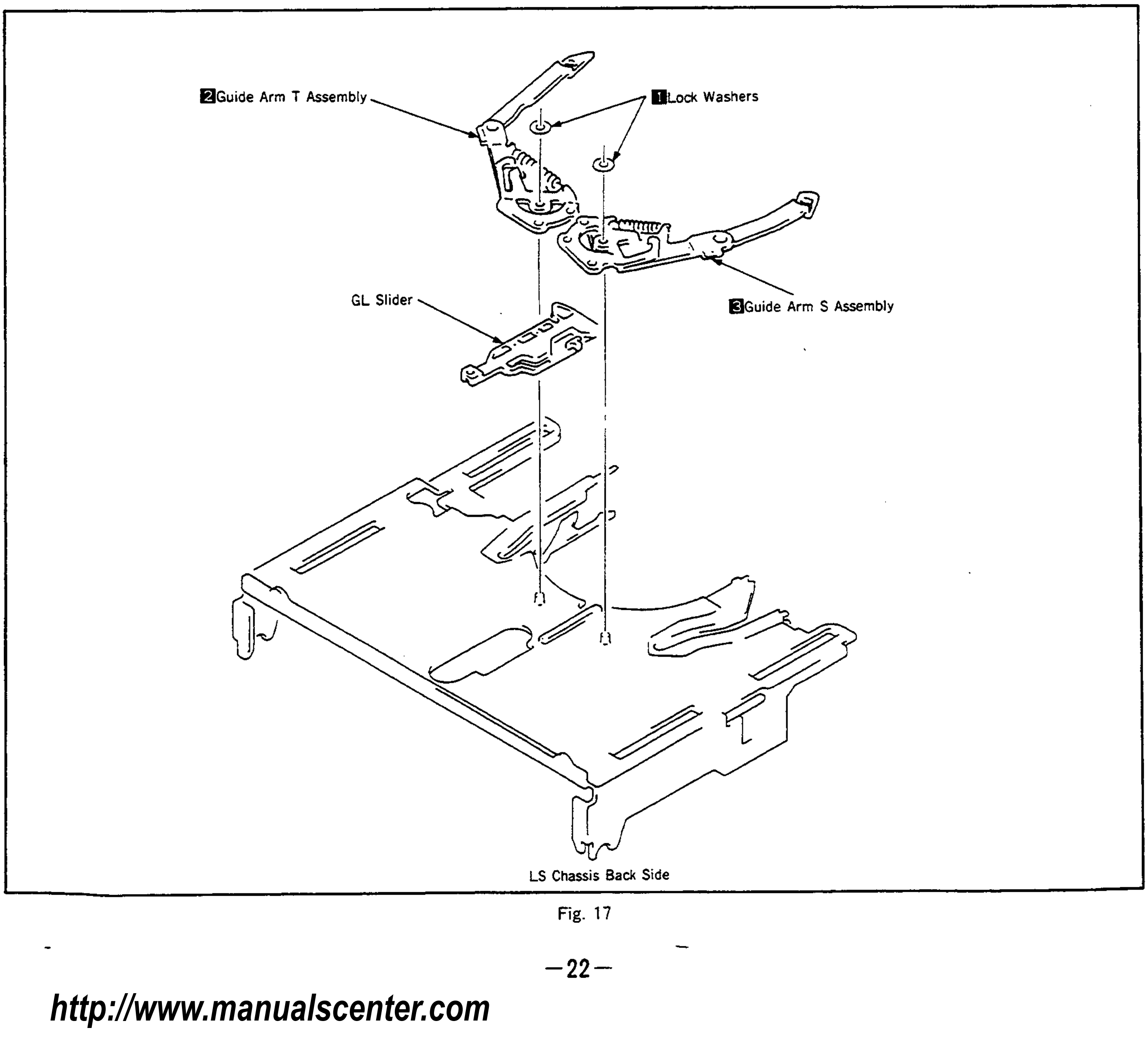


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw [1], then the string [2] from the supply reel table assembly [3]. For easy removal of string block [4], insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly [3].
8) Remove a tension coil spring [5].
9) Turn the TG-1 arm assembly [6] up to a portion ⓒ of LS chassis hole in the arrow Ⓐ direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake [7] toward the arrow Ⓑ, mount thesupply reel table assembly [3].
2) Route the string [2] under the TG-1 arm asembly [6], andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow Ⓐ (Fig. b).
3) Wind the string [2] along the groove of supply reel t assembly [3] (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block [4] toward the arrow Ⓒ and tighten the screw [1] (Fig. a).
5) Engage the tension coil spring [5] to the chassis hook.

Note : Confirm that the string [2] is surely wound around the groove of supply reel table assembly [3] (Fig.a).

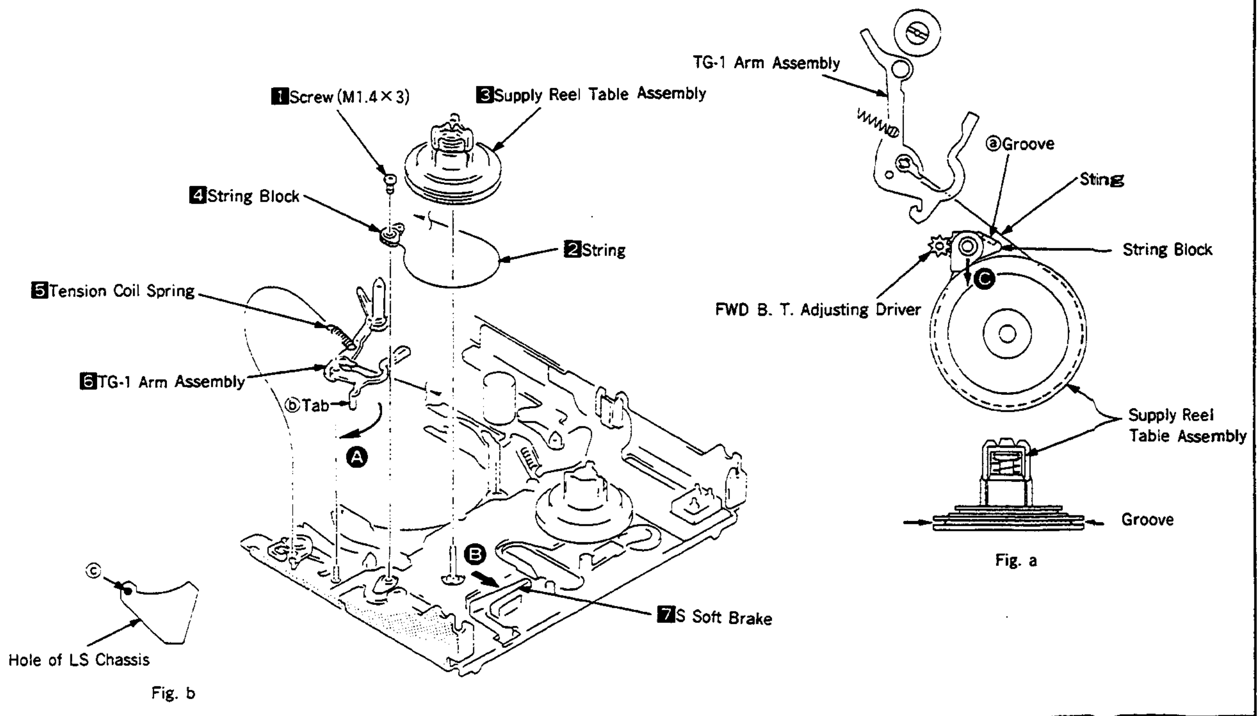
6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.



1 Screw (M1.4 × 3)
3 Supply Reel Table Assembly
4 String Block
2 String
5 Tension Coil Spring
6 TG-1 Arm Assembly
ⓑ Tab
Ⓐ
Ⓑ
7 S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐ Groove
Sting
String Block
FWD B. T. Adjusting Driver
Ⓒ
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly 1 .
2) Remove a compression coil spring 2 .

2.Mounting

1) Insert a compression coil spring 2 into the boss on chassis.
2) Rotate gently the TG-2 roller assembly 1 until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

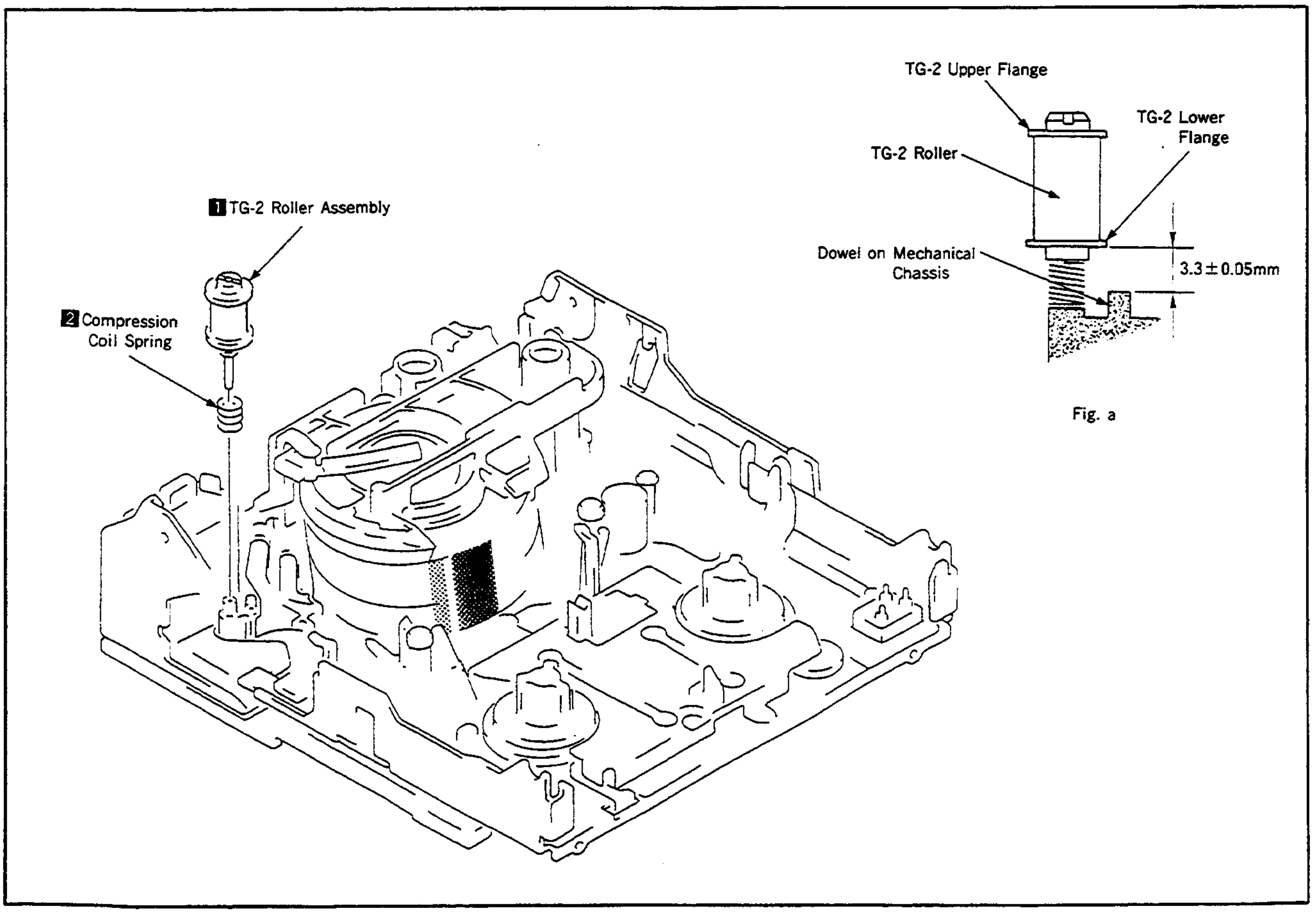

TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a
1 TG-2 Roller Assembly
2 Compression Coil Spring

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring 1 in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly 2 from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly 2 to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring 1 to the mechanicalchassis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

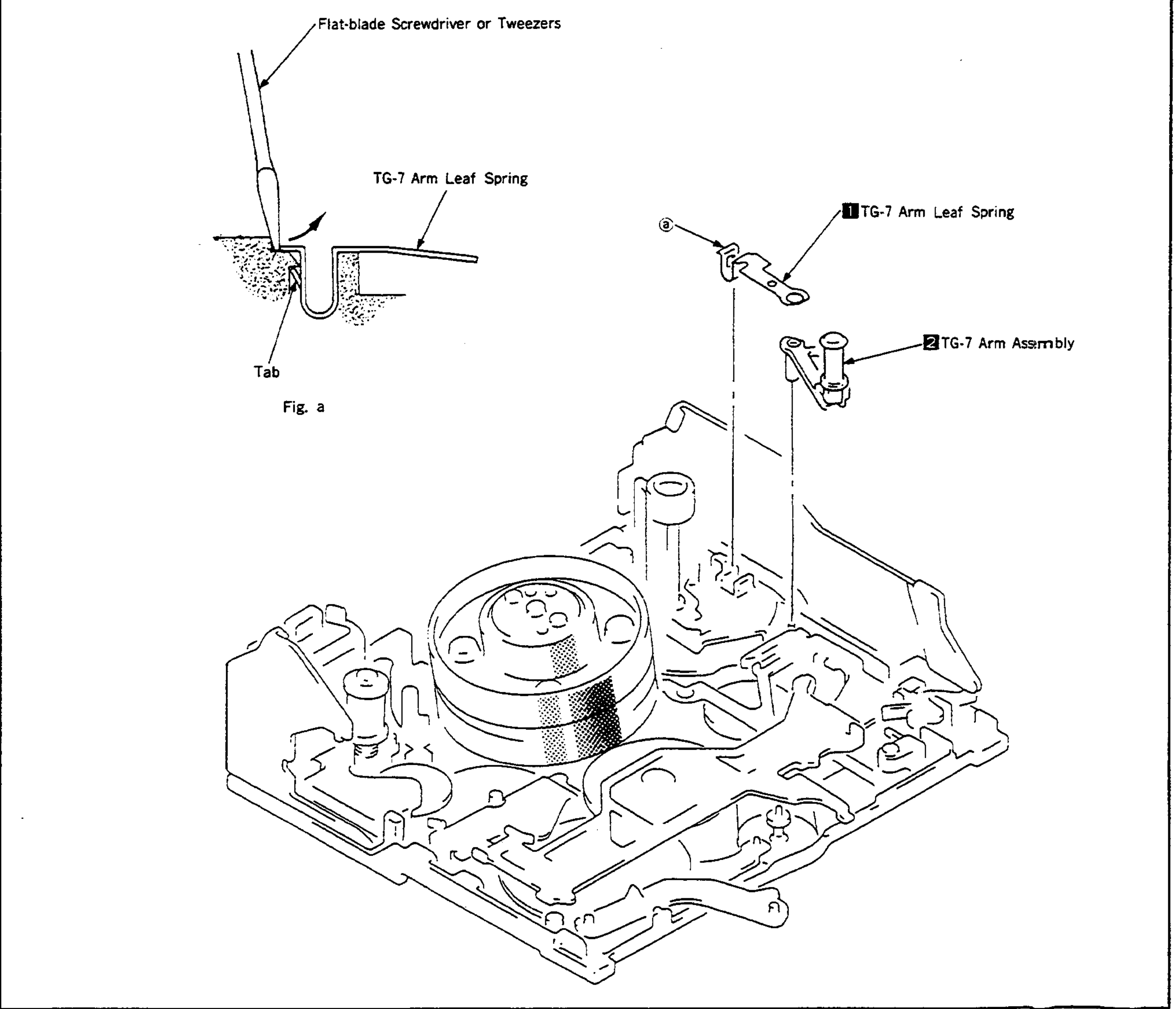


Fig. 20

3 . LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

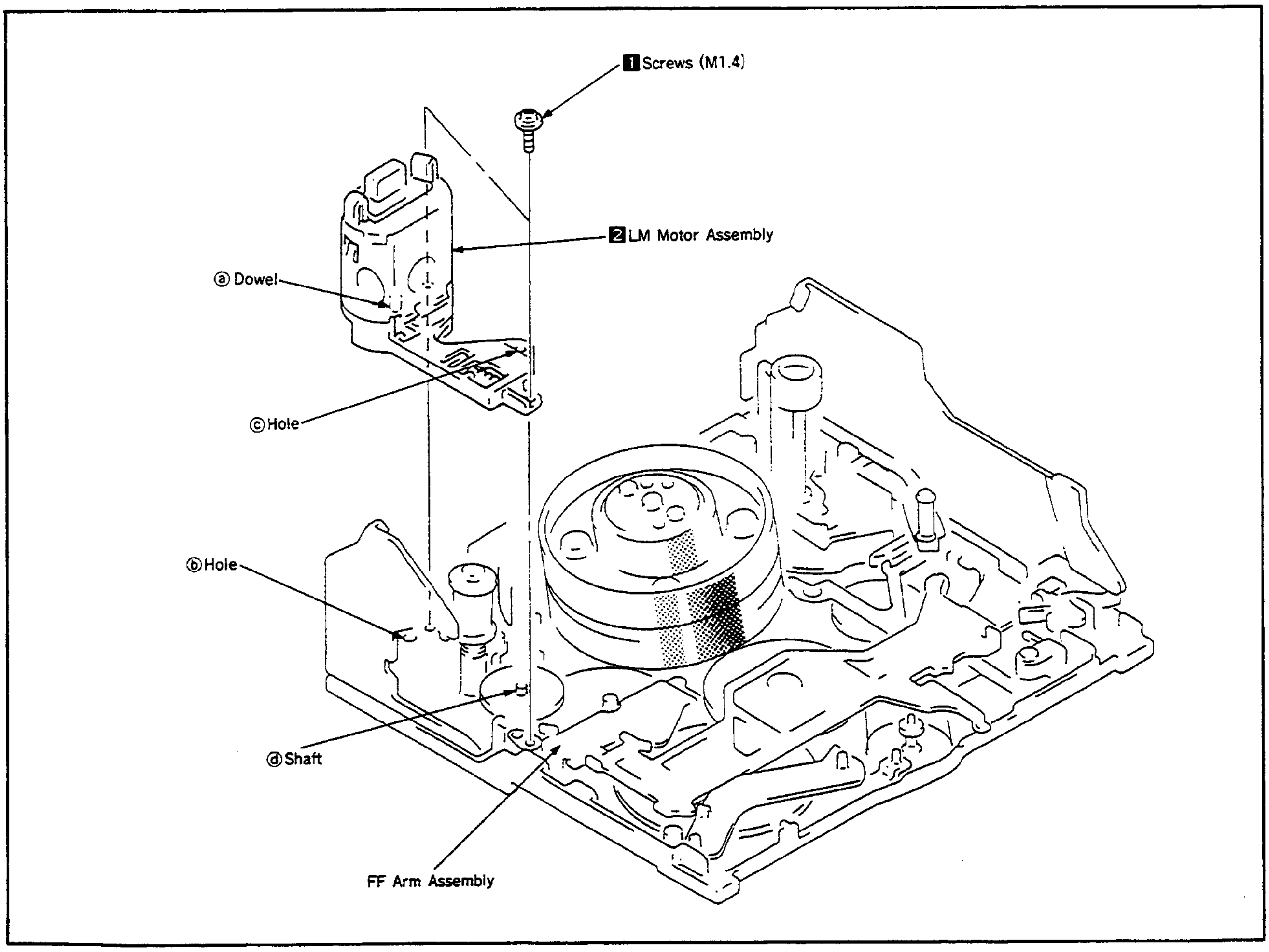


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller ❷.

2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh and cam groove.

Note : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

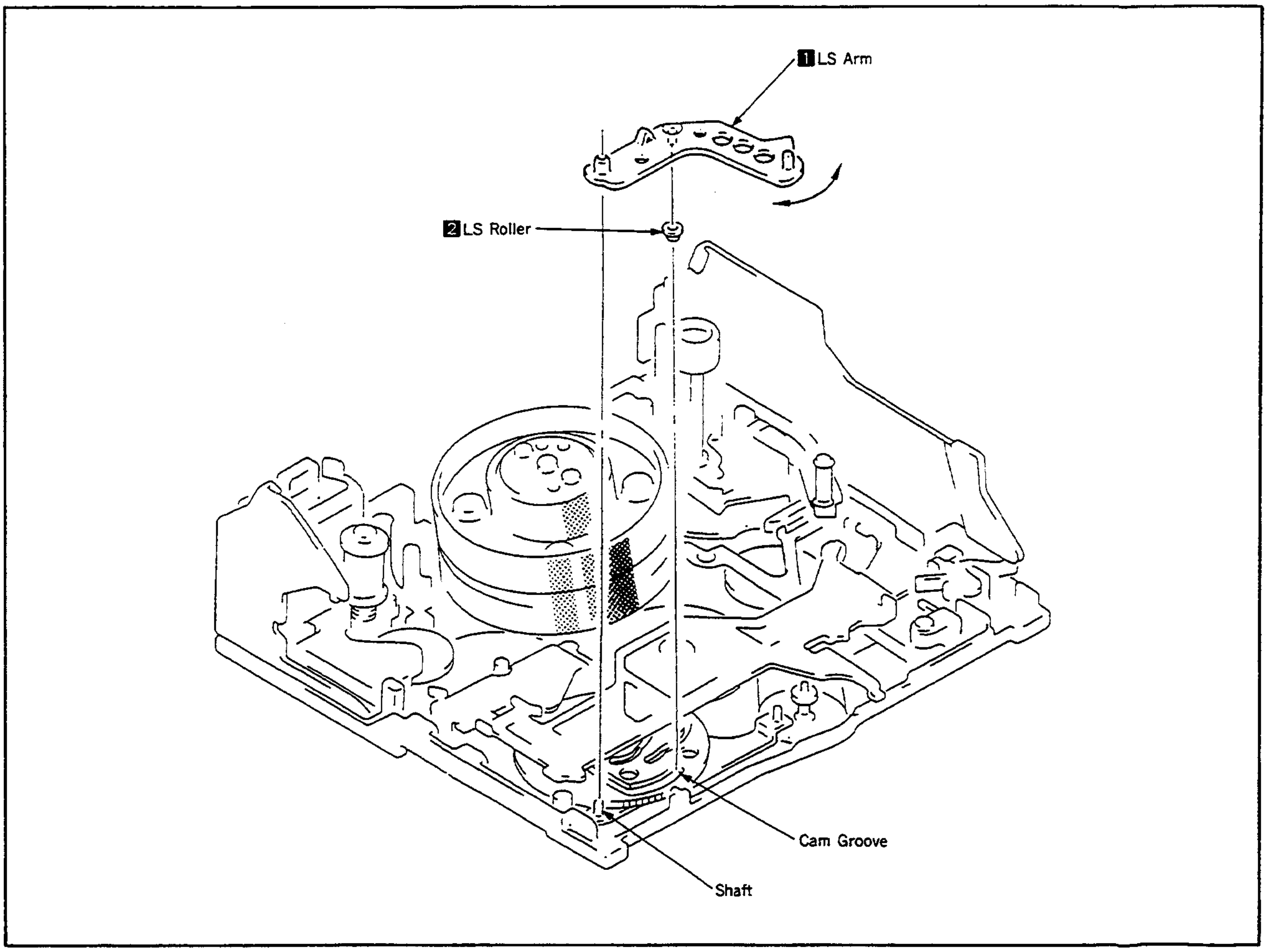


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

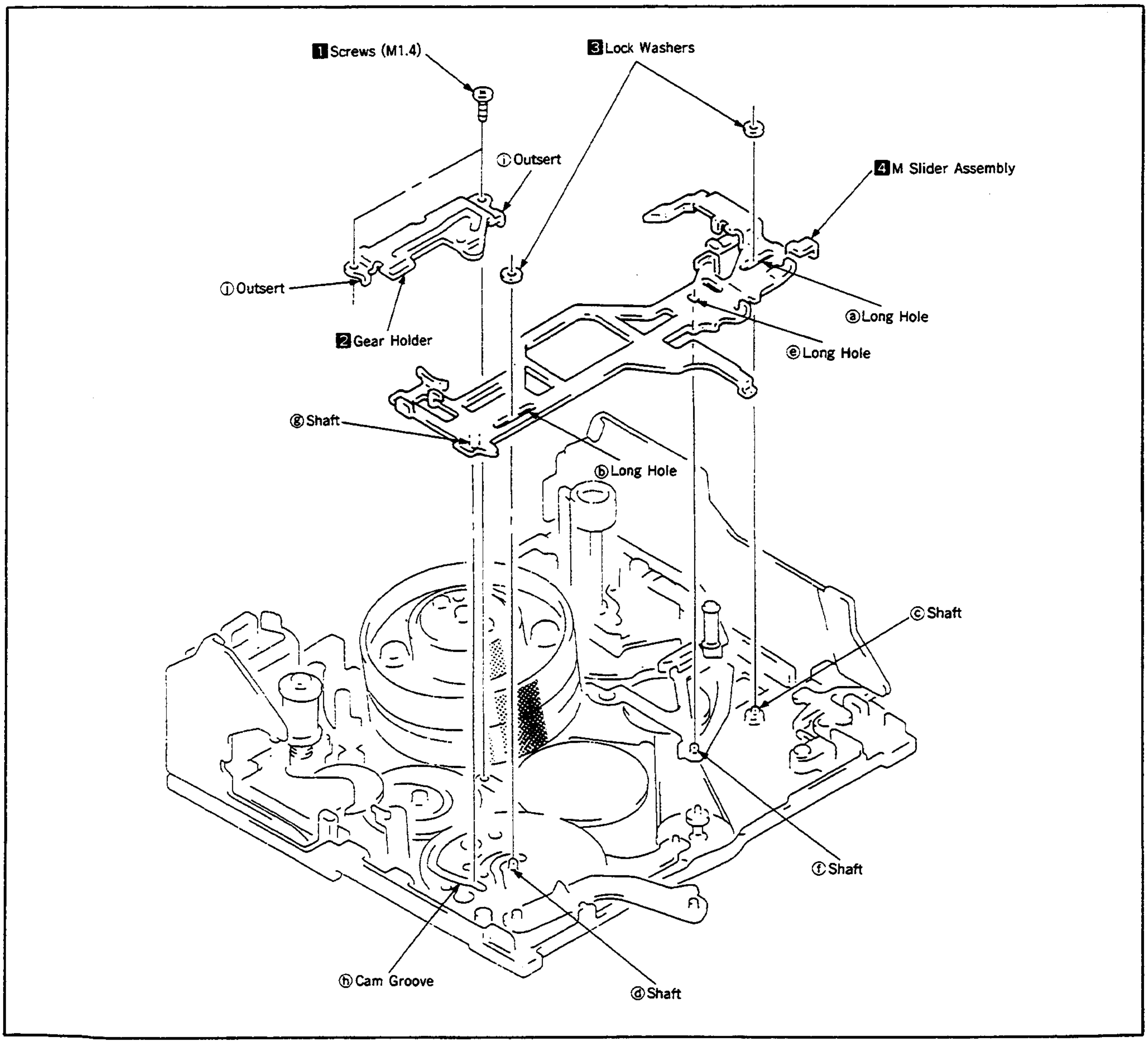

❶ Screws (M1.4)
❸ Lock Washers
ⓙ Outsert
❹ M Slider Assembly
ⓘ Outsert
ⓐ Long Hole
❷ Gear Holder
ⓔ Long Hole
ⓖ Shaft
ⓑ Long Hole
ⓒ Shaft
ⓕ Shaft
ⓗ Cam Groove
ⓓ Shaft

Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

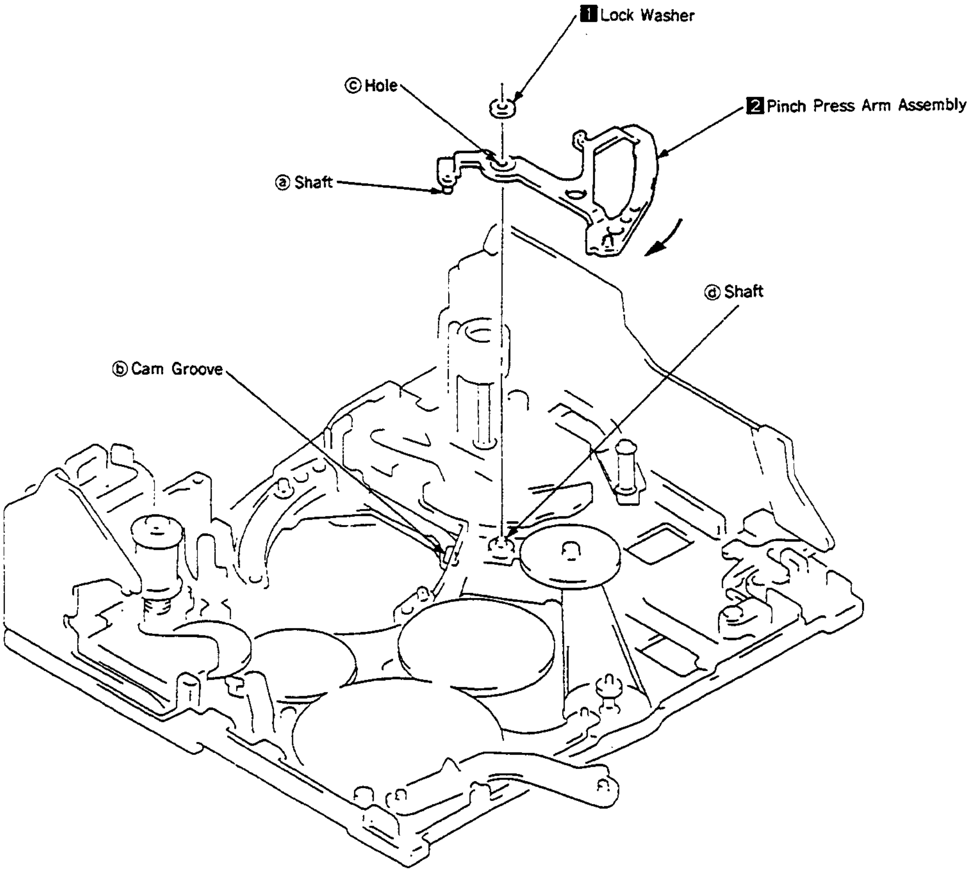


Fig. 24

. CAM (Fig. 25)

Removal

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam **1**.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam **1**, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

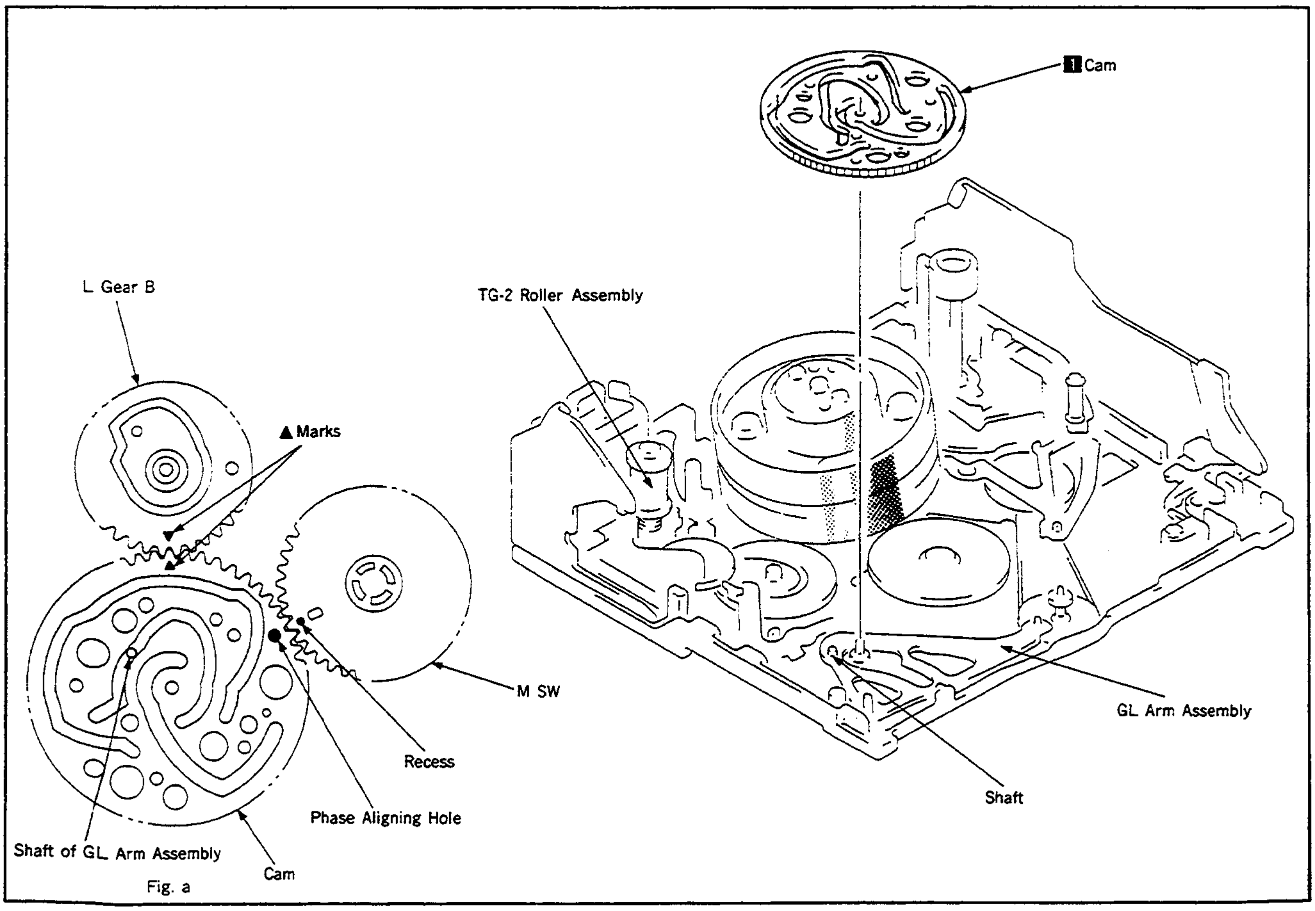


Fig. a

Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly 1.

2. Mounting

1) Mount the GL arm assembly 1 with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

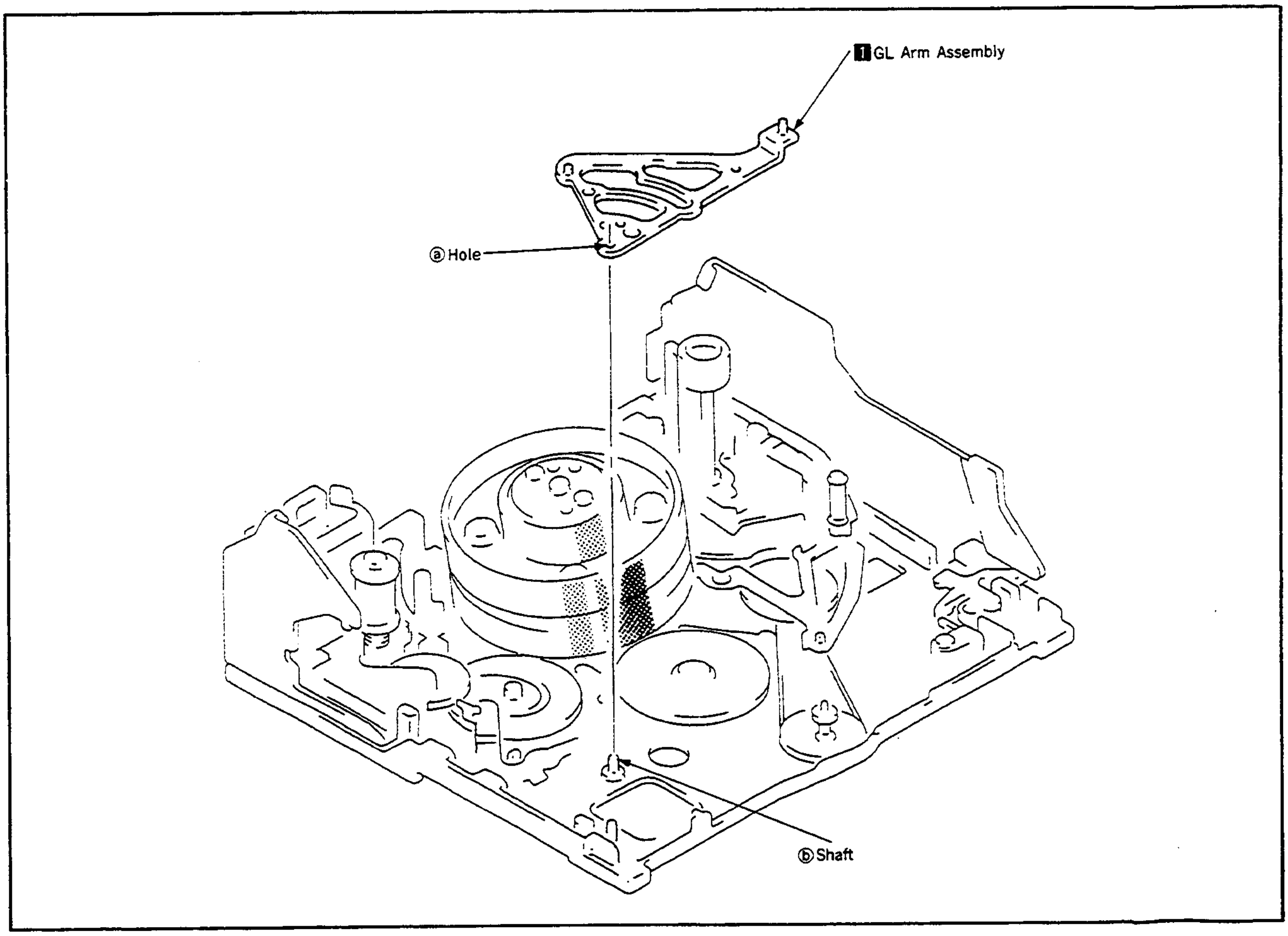


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

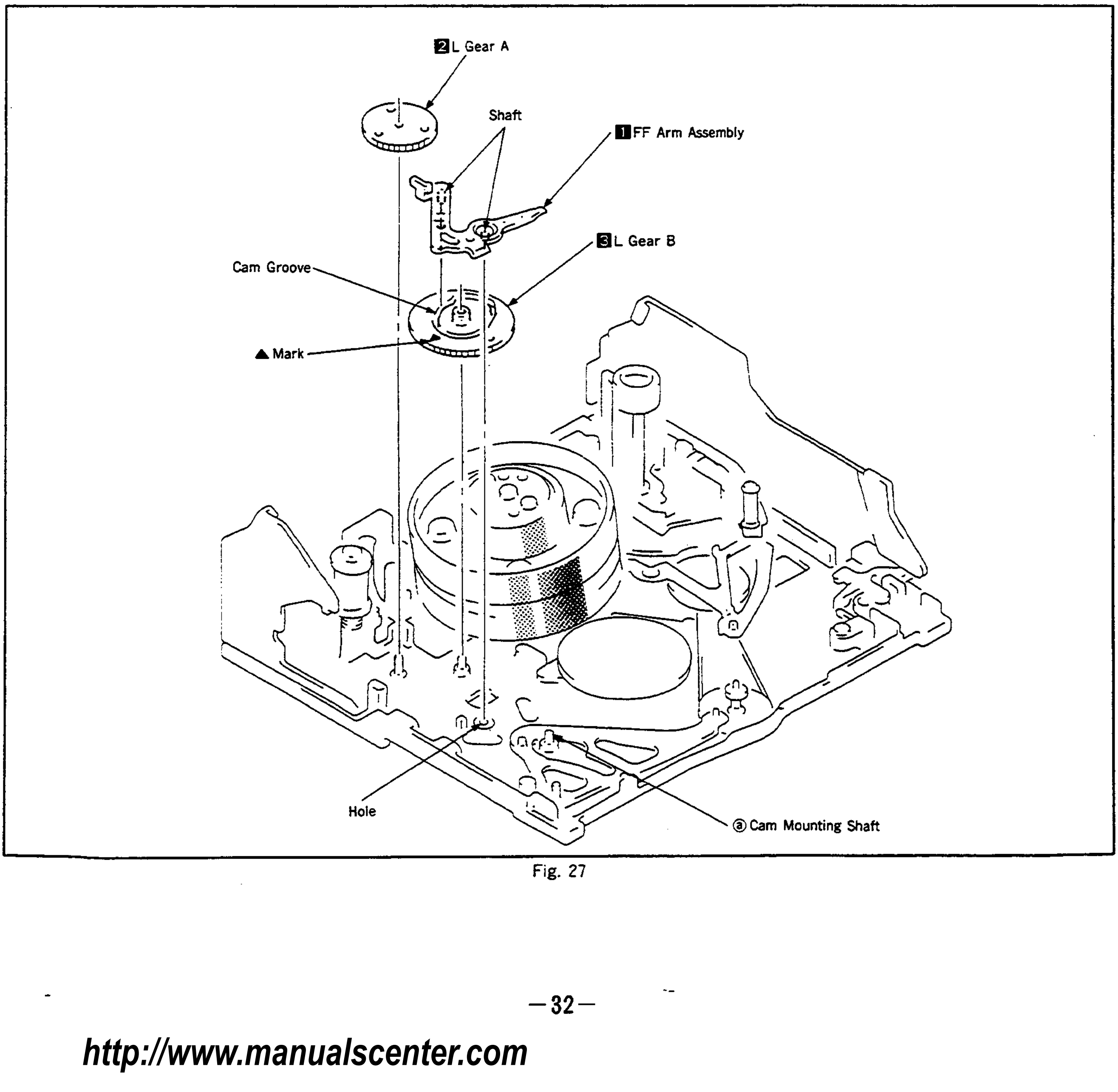


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer 1, then remove together the Change gear assembly 2, relay belt 3 and relay pulley 4.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt 3 to the relay pulley 4 and Change gear assembly 2, mount respective parts.

*At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer 1.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

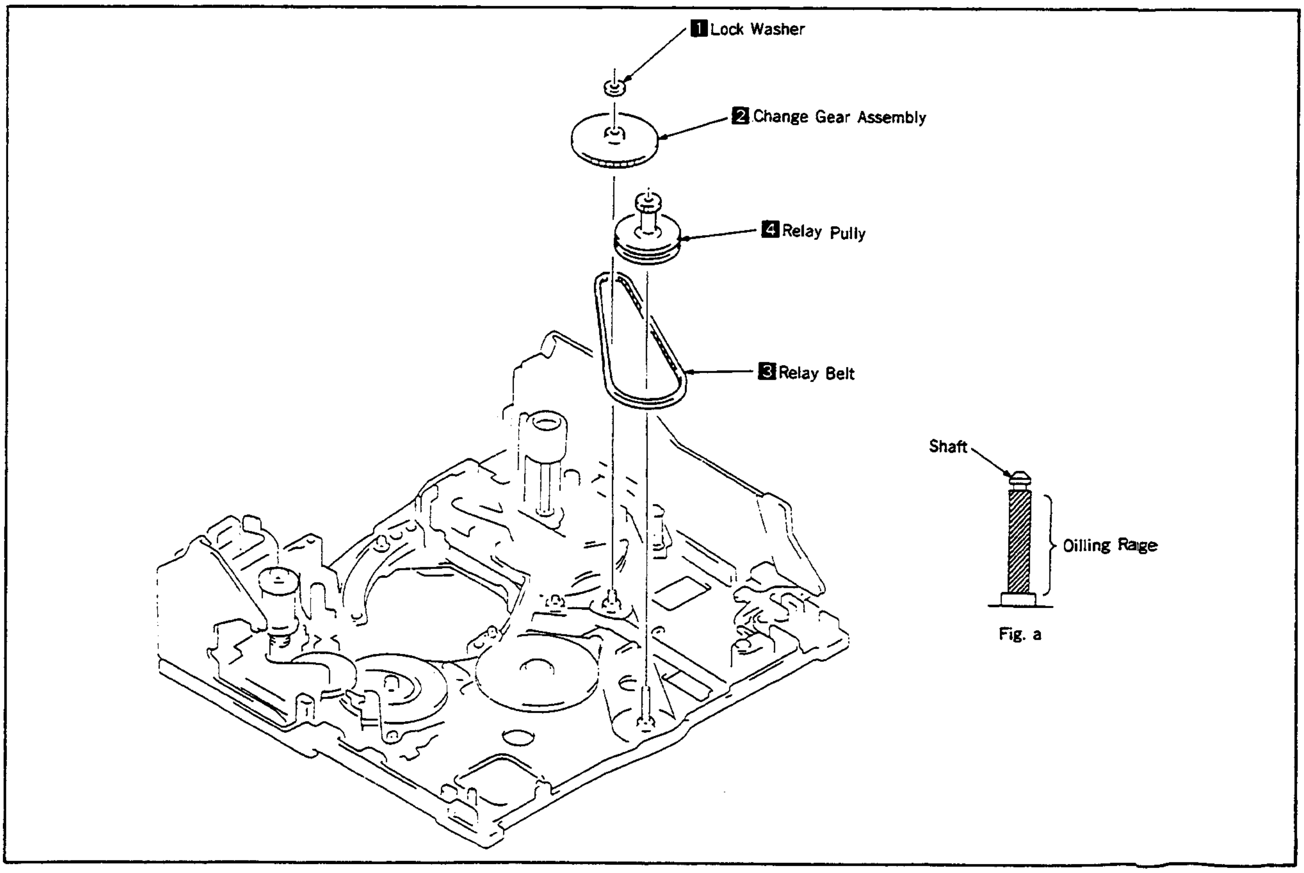


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws ❶ (Fig. 29).
2) Mount the jig ❷ (Ref. No. J-10) with the two supplied screws ❸, then screw the attached hexagon socket screws ❹ to the jig ❷. The rotary upper drum ❺ will move upward and come off (Fig. 30).

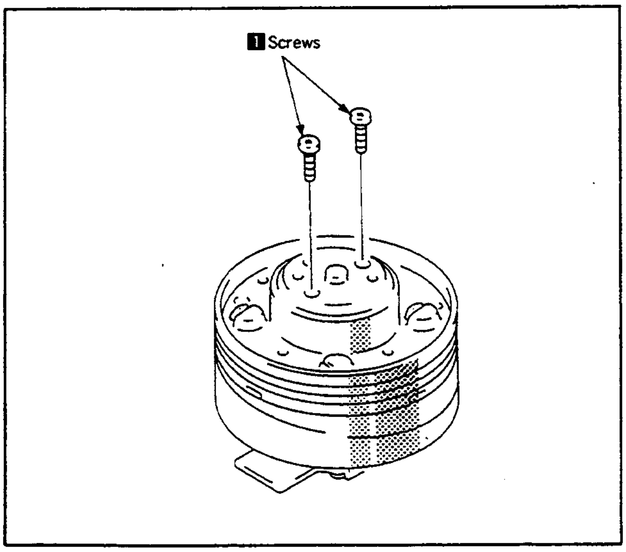


Fig. 29

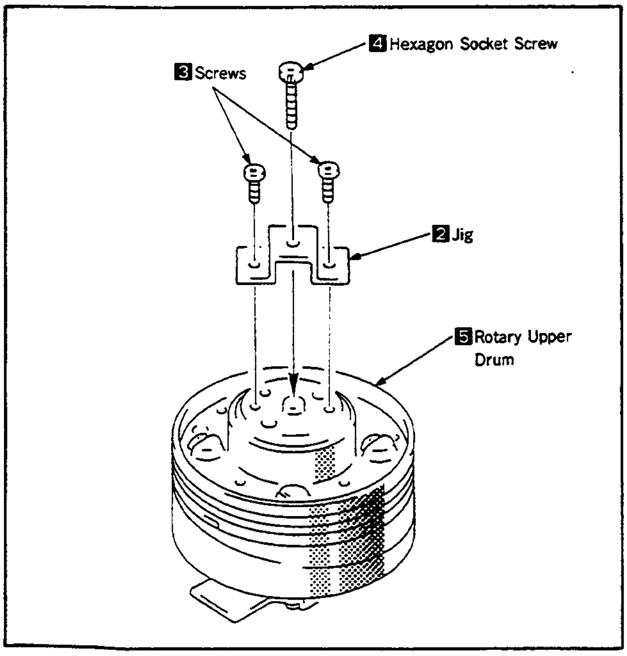


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❻ (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum ❺ by passing the jig through its positioning hole ❼. (Fig.31)
3) Remove the jig ❻ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws ❶ alternately (Fig.29).
4) Insert the jig ❻ into the positioning hole ❼ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

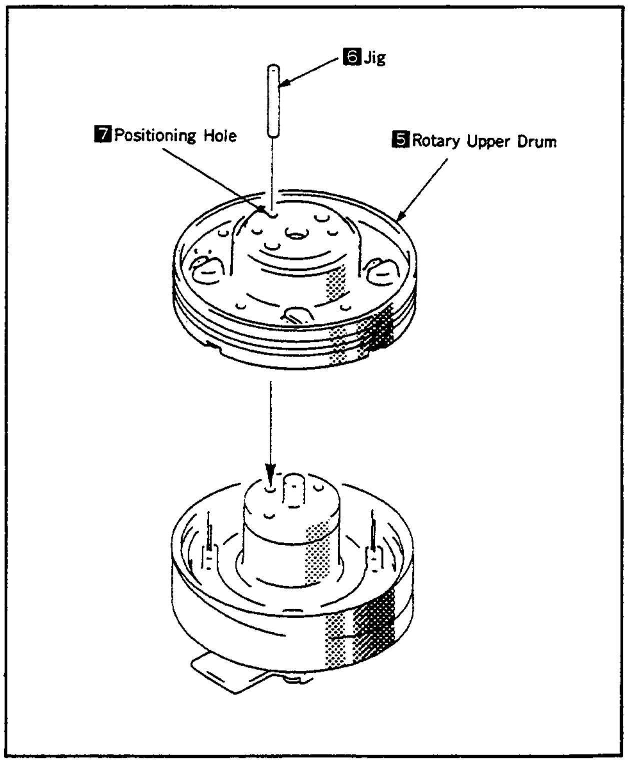


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ❶.

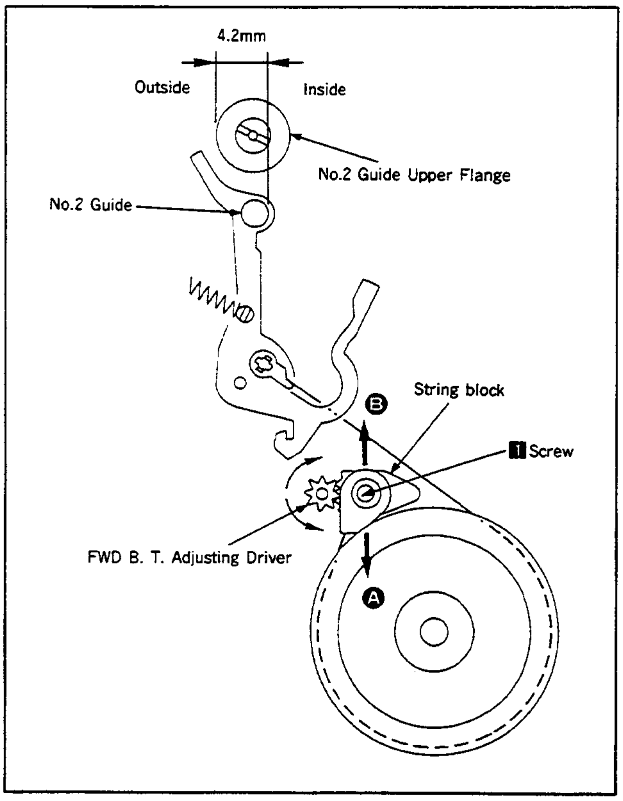

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
❶ Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

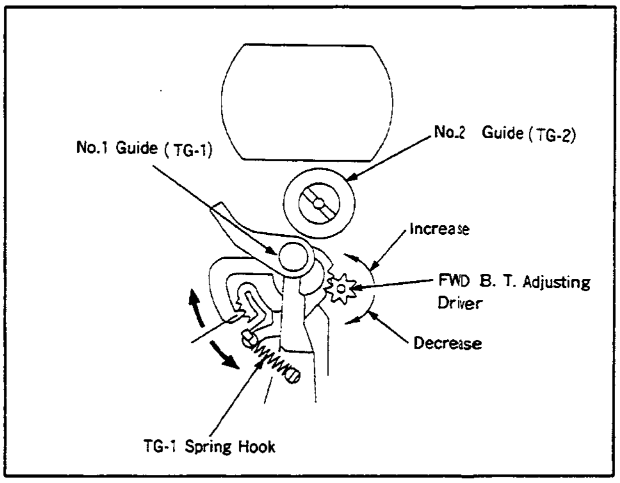

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.

Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

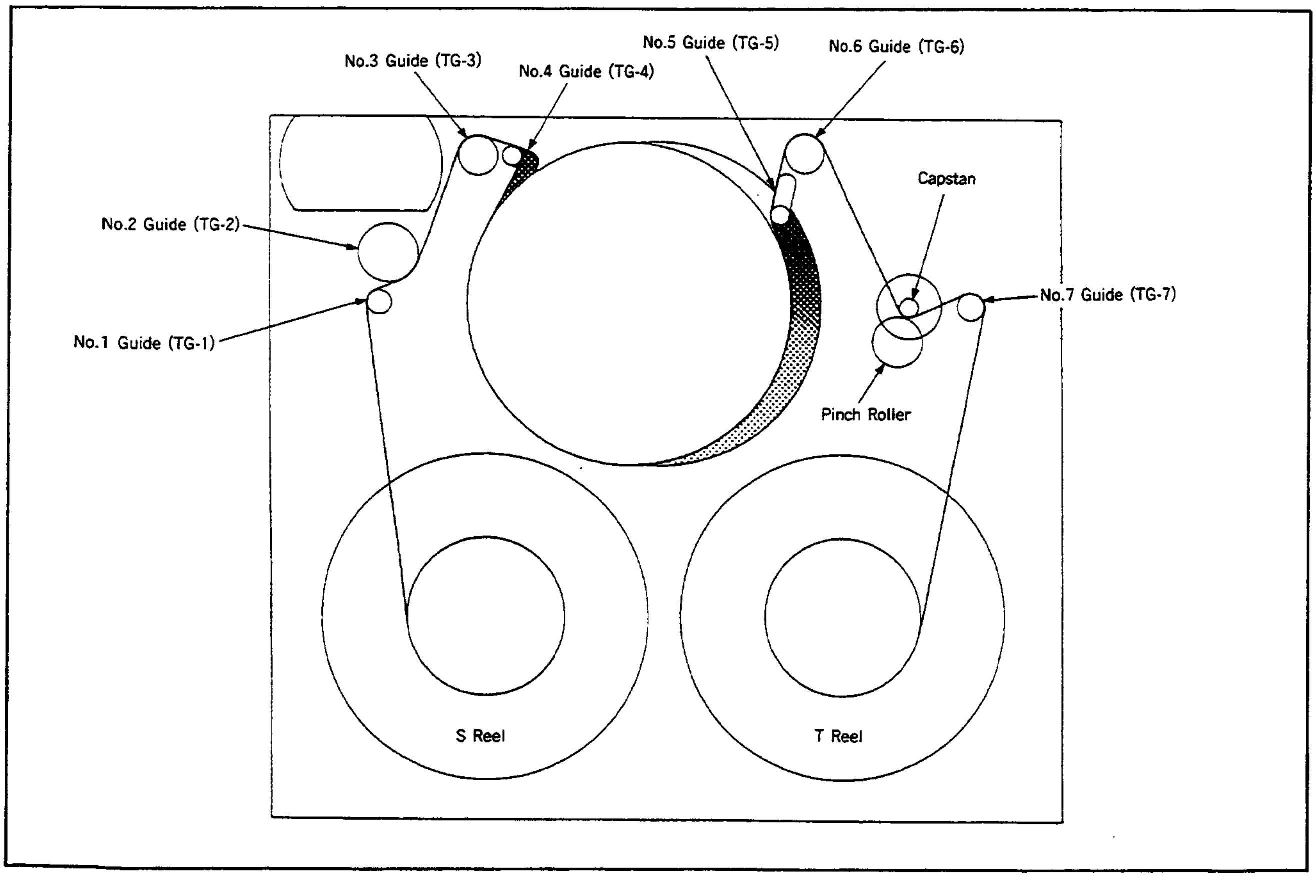


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

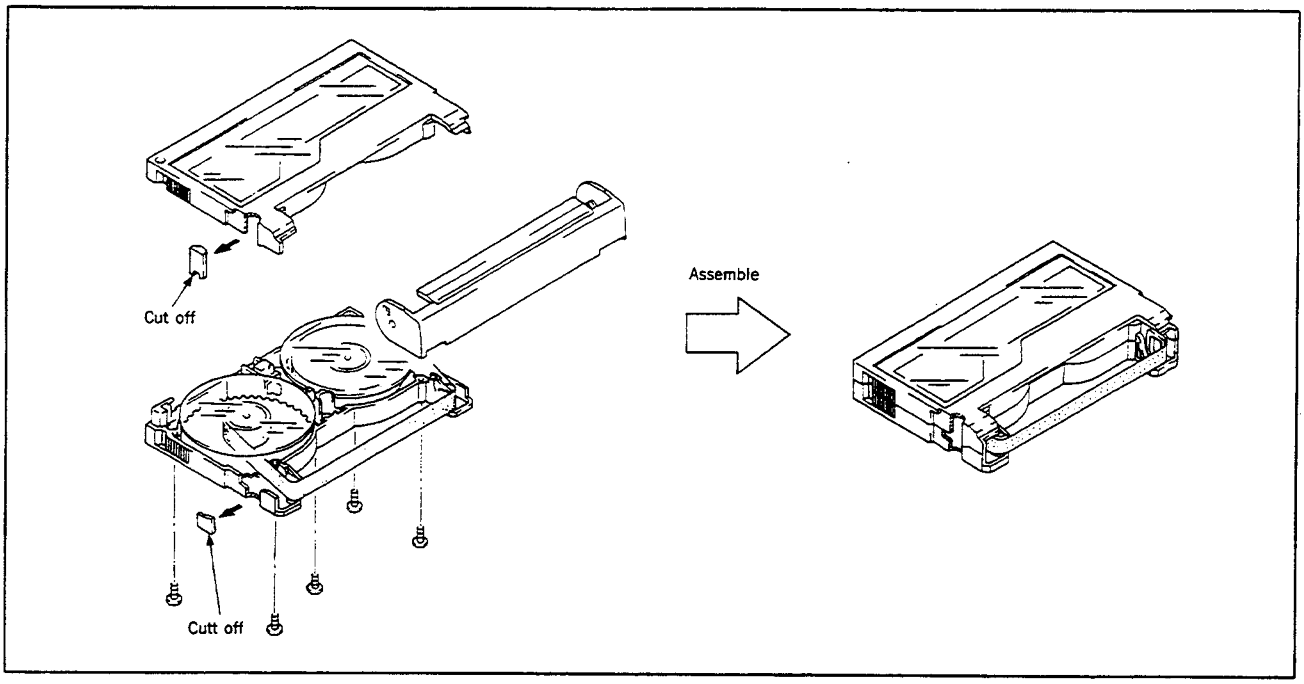


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
   CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
   CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

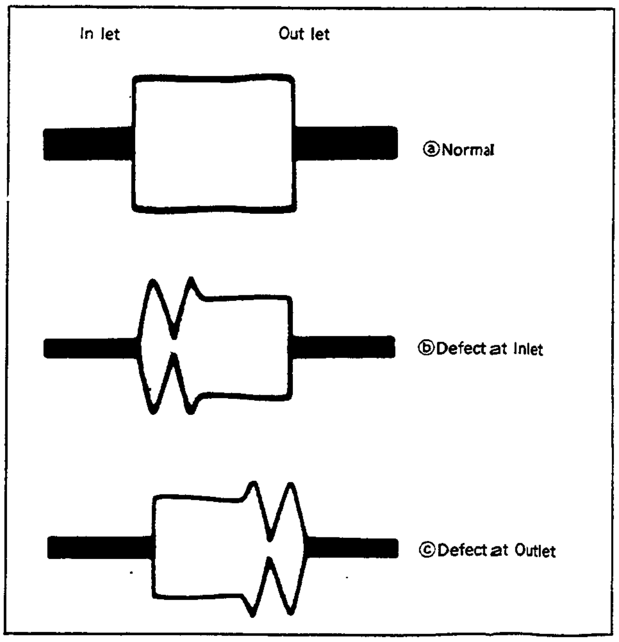


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw ❶ and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw ❶ to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw ❷ and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw ❷ to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

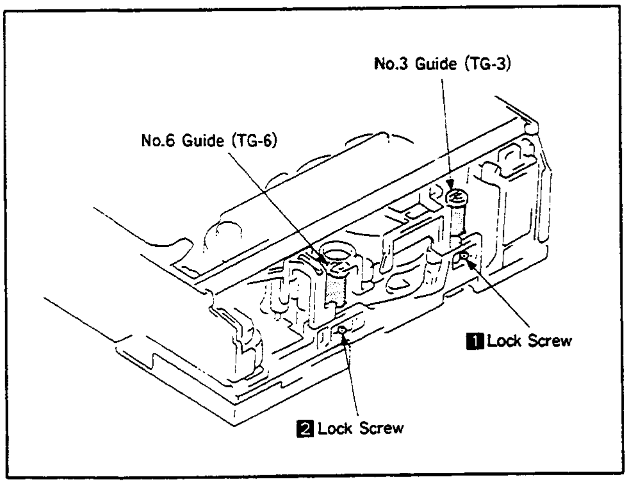


Fig. 36

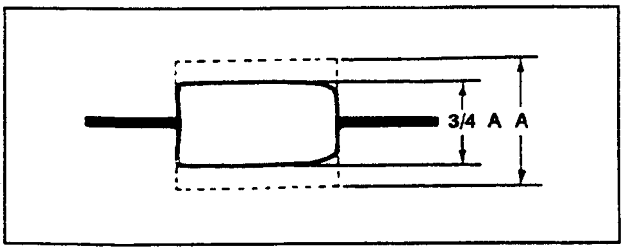


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

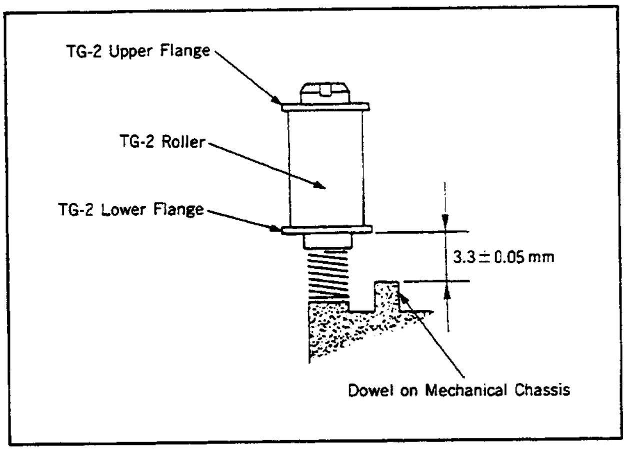


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

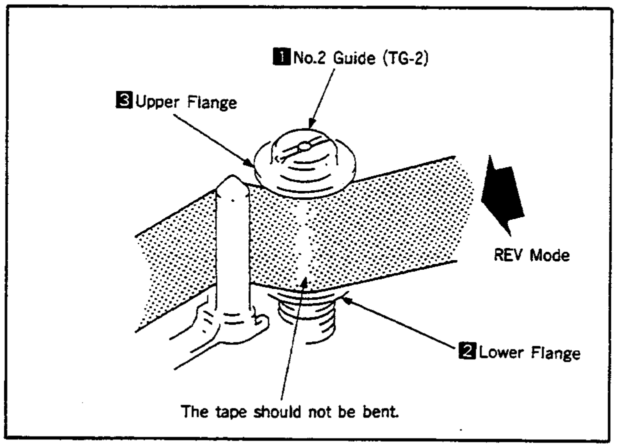


Fig. 39

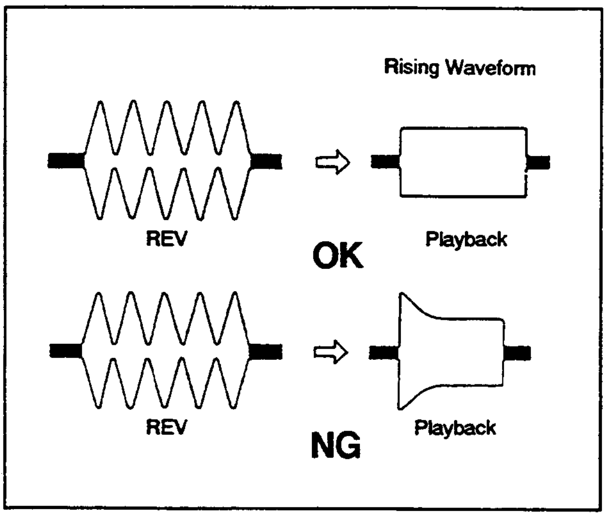


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

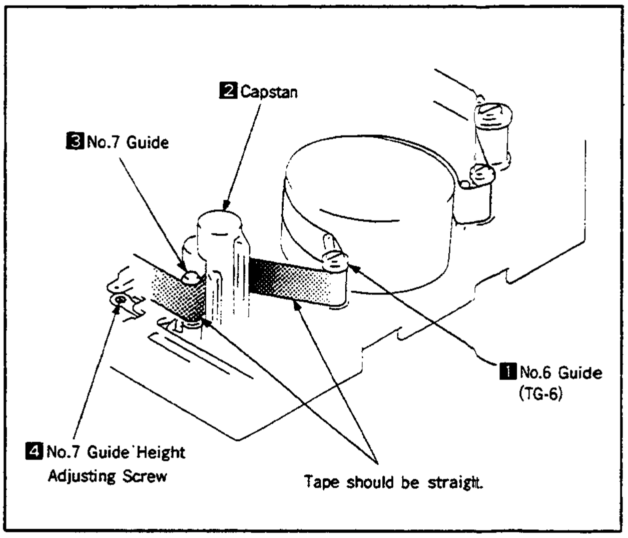


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

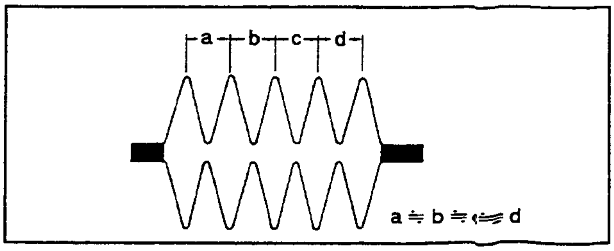


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

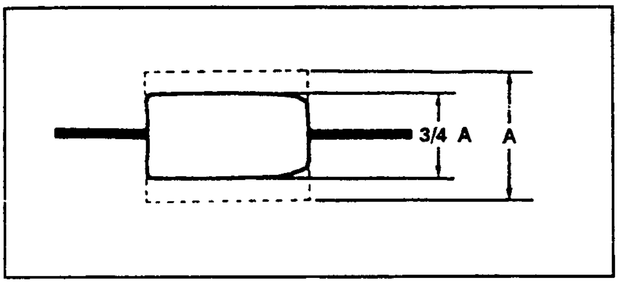


Fig. 43

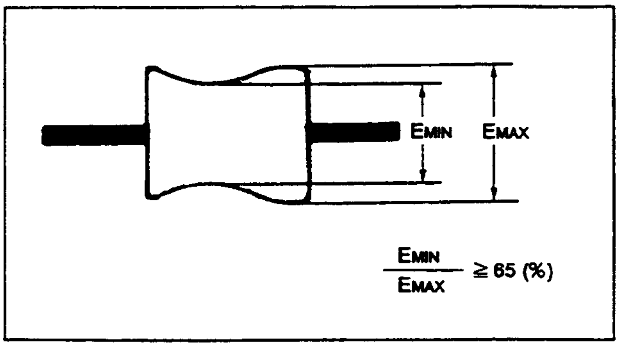

EMIN
EMAX
EMIN / EMAX ≧ 65 (%)

Fig. 44

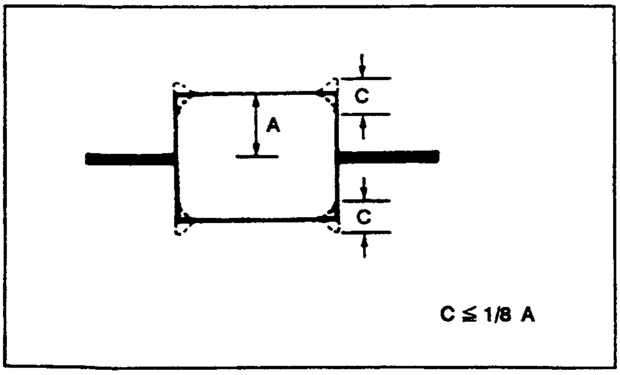


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

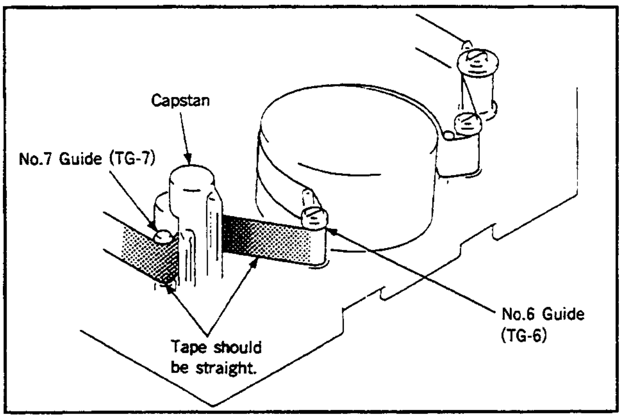

Capstan
No.7 Guide (TG-7)
Tape should be straight.
No.6 Guide (TG-6)

Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

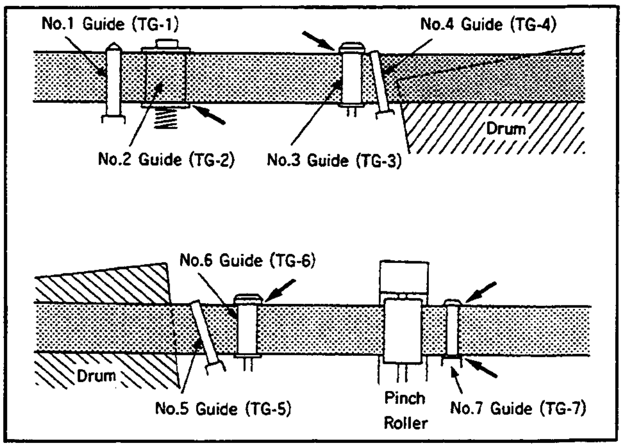

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

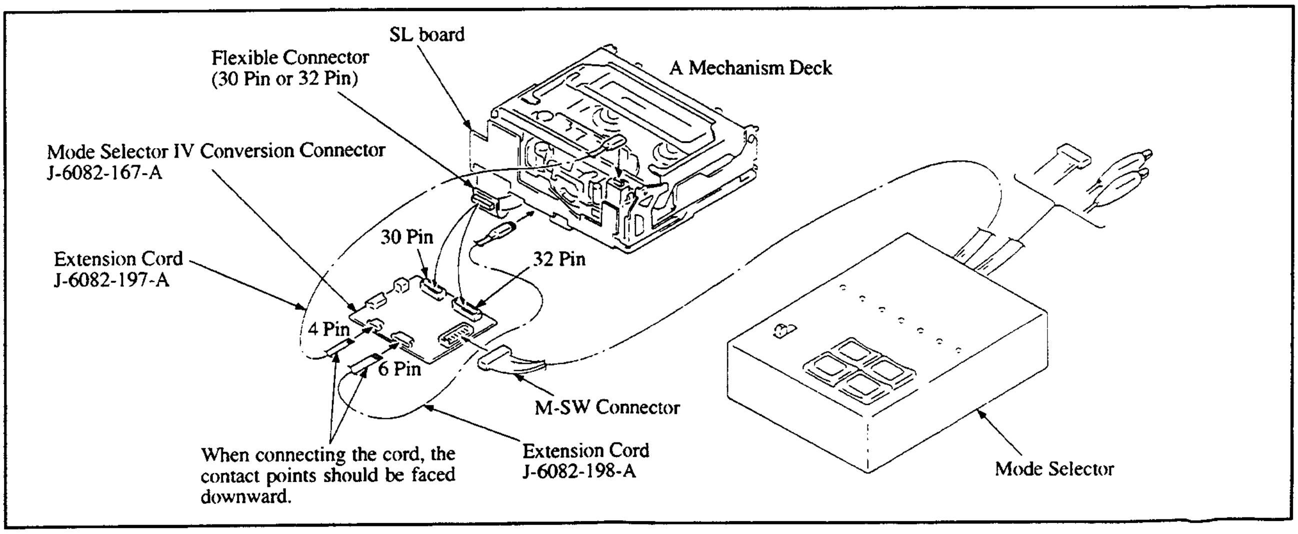
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477)

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector (30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector J-6082-167-A
30 Pin
Extension Cord J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord J-6082-198-A
Mode Selector

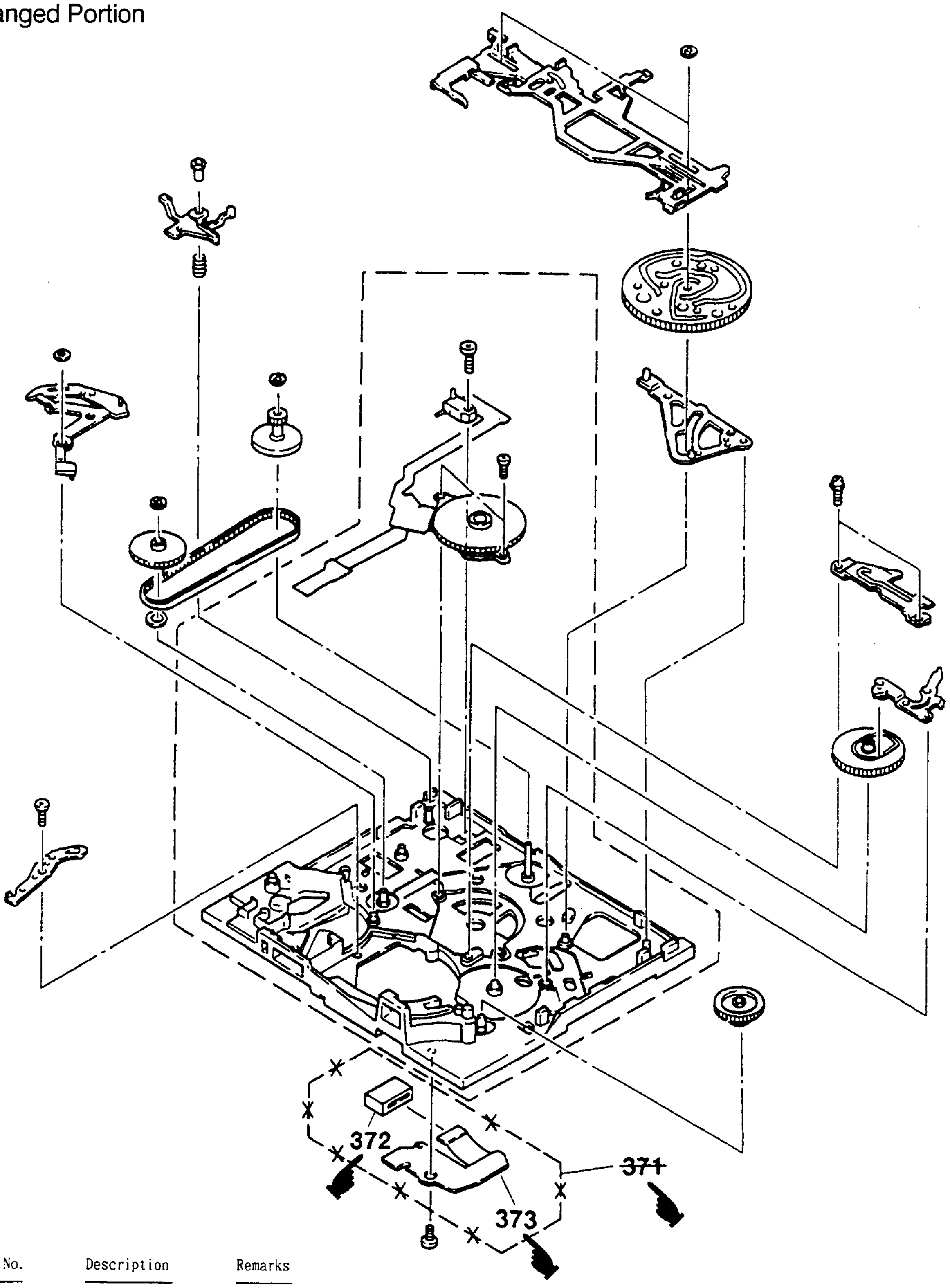
〈CORRECTION〉

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➔	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~	☛
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD	☛

9-973-199-84

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